STWE REVIEW

OCTOBER 1959

Volume 6 Number 4

THE INDUSTRIAL COMMUNICATIONS ORGANIZATION — Richard M. Robinson

WRITING AND THE STUDY OF GRAMMAR — W. Nelson Francis

EVALUATION OF THE REPORT — Charles L. Tutt, Jr.

A METHOD OF CATALOGING CHANGEABLE IBM TYPE BARS — Virginia Brennan

FORMAL TRAINING FOR TECHNICAL WRITERS — AN INDUSTRIAL VIEWPOINT — Paul I. Berman

AN INDUSTRIAL-SPONSORED COURSE IN TECHNICAL WRITING — John L. Hamilton

published by the
SOCIETY OF TECHNICAL WRITERS AND EDITORS

WELCOME, TPS READERS

Beginning with this issue, copies of the *STWE Review* are being sent to the members of the Technical Publishing Society. This is being done with the concurrence of the executive boards of STWE and TPS in anticipation of the prospective merger of the two societies. We welcome our new readers from TPS and we hope that they will send their suggestions, opinions, and articles to the editor. These new ideas will, we are sure, help to improve the journal and benefit all of its readers.

THOMAS A. GROGAN
President, Society of
Technical Writers and Editors

STWE REVIEW

OCTOBER 1959
VOL. 6 NO. 4 JOURNAL OF THE SOCIETY OF TECHNICAL WRITERS AND EDITORS

EDITOR

Allan H. Lytel
Crosley Division
AVCO Corporation

ASSISTANT EDITOR

A. Stanley Higgins
General Electric Company

ADVERTISING MANAGER

Kenneth G. Tong
High Voltage Engineering Corp.

EDITORIAL STAFF

Cleo Gray, Shirley Emhoff,
John Sullivan, Ed Frank

TYPESETTING

Quality Typesetting Company
Cincinnati, Ohio

LITHOGRAPHY

John S. Swift Company, Inc.
Cincinnati, Ohio

THE INDUSTRIAL COMMUNICATIONS ORGANIZATION
by Richard M. Robinson 4

WRITING AND THE STUDY OF GRAMMAR
by W. Nelson Francis 7

EVALUATION OF THE REPORT
by Charles L. Tutt, Jr. 11

A METHOD OF CATALOGING CHANGEABLE IBM TYPE BARS
by Virginia Brennan 12

FORMAL TRAINING FOR TECHNICAL WRITERS — AN INDUSTRIAL VIEWPOINT
by Paul I. Berman 18

AN INDUSTRIAL-SPONSORED COURSE IN TECHNICAL WRITING
by John L. Hamilton 20

BOOKS 24

EDITORIAL NOTES 3

LETTERS 2

NEWS AND VIEWS 16

STWE REVIEW is published quarterly (January, April, July, October) by the Society of Technical Writers and Editors, Inc., P.O. Box 3706, Beechwold Station, Columbus 14 Ohio, U.S.A. Second-class postage paid at Columbus, Ohio, and at additional mailing offices. Printed in the U.S.A.

Copyright 1959 by the Society of Technical Writers and Editors, Inc.

Single copy $1.00. Subscriptions, 1 year $4.00. Address all subscriptions and correspondence to the publisher. Advertising rates will be supplied on request.

Copies returned under Form 3579 should be sent to Society of Technical Writers and Editors, Inc., P.O. Box 3706, Beechwold Station, Columbus 14, Ohio. Return postage guaranteed.

A NOTE TO CONTRIBUTORS

Contributions to the *Review* are always welcome; short articles of 500 to 1000 words are most easily fitted into our small magazine.

Send the original on heavy white bond paper, typewritten, double or triple spaced, plus two carbons. Leave at least a 1-inch margin on all sides, number the pages consecutively, and be sure that all illustrations are keyed to the text.

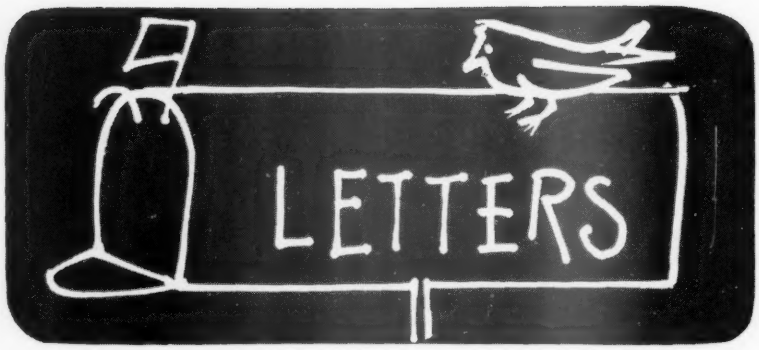
Articles should not exceed 2500 words plus three illustrations.

We assume that every article is approved by your company before it is submitted. The authors' names and affiliations should be on the manuscript. A short biographical note is most helpful. This note should include the present title of the author, the full name of his organization, and complete information about books, other articles, or any other publication credits. Please address all contributions to the Editor; the Review Committee will read your article and our publication plans will depend on their collective judgment.

The *Review* has no objections if articles appearing in its are reprinted for noncommercial use but, as a matter of courtesy, the author's permission should also be requested. If an article is going to be quoted or abstracted, as in a book, the *Review* feels that this is a matter for the author. Under the doctrine of fair use one can quote small sections of a publication with proper credit. But any abstracting or reviewing or substantial reuse of an article requires the author's permission. The *STWE Review* is copyrighted but the rights to any further use of an author's material reverts to him upon request.

ADVERTISING INFORMATION

Advertising rate sheets are available from Advertising Manager Kenneth G. Tong, High Voltage Engineering Corporation, Burlington, Massachusetts. Deadlines for the receipt of advertising copy (photo-offset reproducible) are November 20, February 20, May 20, and August 20.



To Editor, *STWE Review*:

I like the July issue of the *Review*. Mr. Reising's article, in particular, happens to duplicate my own views.

Harold B. Simpson's "Form and Style in Technical Reports" is very well presented, though some may object to the choppiness of his short sentences. He achieves a fog index of around 13 by keeping most sentences below 25 words and having a sprinkling of sentences as short as four words. By this means he offsets the more than average number of polysyllables. One sentence (on page 5) struck me as being all too true: "Behind the precocious use of words is the desire to impress — perhaps even, and after some practice, a self-induced hypnotism on the part of the writer with his own vocabulary." Readers of the article may well get the idea that Mr. Simpson must be a good hypnotic subject.

Eric J. Young
Clevite Ordnance
Cleveland, Ohio

To Editor, *STWE Review*:

I have been reading hortative little essays on sensitive style, sleek syntax, and — the little darling of all writers on writing — *communication* in the *STWE Review* until I am blue in the face. At first I was green; I envied all these people who were on to this writing dodge while I was still poking tentatively at it, but I soon came to a more balanced state of mind. Just ignore them, I said to myself.

This is an attitude that makes for bliss, and I was happy in it. But I might have known that I would be turned out of even this feather bed. Now it is the *poet* who speaks! "Writing on aircraft?" asks Mr. Henry Birnbaum in effect. "Mount Pegasus instead and see how much sweeter she rides." This lovely marriage of poetry and technical writing, it struck me when I read the title of his article, was certainly not made in any reasonable man's heaven. How does he justify it? When I got through reading his dandy prose, I understood: poor Mr. Birnbaum is only trying to get the two halves of his personality together.

If he *is* caught on the horns of schizophrenia, I sympathize with him, for I have tangled with the stuff myself. But if he is presuming to give me some kindly advice through the pages of the *Review*, turn about is only fair play. By all means, Mr. Birnbaum, do your poetry for your "little magazines," and "involve" yourself as much as you like in technical writing, but please don't try to mix the two. At least, *not in public!* It is difficult enough for poor prosy penpokes like myself to write "(a) Turn on Switch P; (b) Turn off Switch Q" without being urged to drench it in hyperbole and finish it off in rhyme. And think of the consequences of your heady potion on the technical artist who is serious about the second half of his title. "Poetry and technical writing?" he asks; and answers: "Then Dali and drafting." And forthwith sees the noble, solid hexnut as a droopy, flaccid doughnut.

No, thank you, Mr. Birnbaum. As we on the Left Bank say, "Je m'en fiche de ses folies."

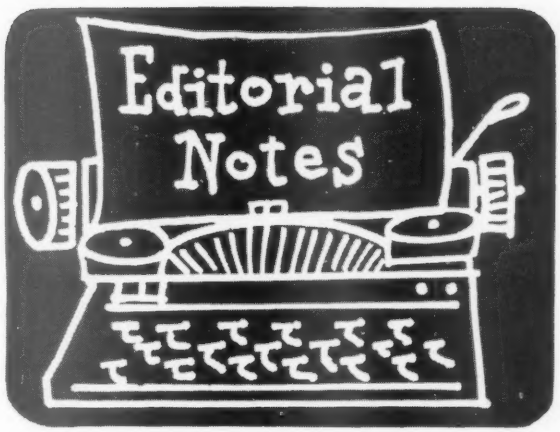
Jesse Dilson
647 East 14th Street
New York 9

To Editor, *STWE Review:*

Because the technical writing and editing profession is very young, the literature abounds with stimulating articles proposing to chart the course that leads into this field of endeavor. One of the most challenging articles is the recent editorial by Mr. Reising in the July issue of the *STWE Review*.

Early in Mr. Reising's article my enthusiasm was aroused when he stated "we must first define the job, starting with the essentials." However, the definition was never forthcoming, and the editorial proved to be only another article defending the approach to technical writing and editing by way of the nontechnical education of a journalist.

(*Continued on Page 32*)



One of the problems that has always confronted the STWE is the matter of recognition. The profession, being relatively young, is unknown by a large segment of the population, though great strides have been made in this area in the past few years.

One answer to this problem is to interest high school students in our profession so that their college careers can be purposefully pointed toward technical writing, which means that fewer future members of our ranks will come through the "back door." Such orientation will obviously mean better qualified members of the profession; increased recognition for the Society is a natural consequence.

This long-range solution to our problem is offered by Frank R. Smith, Head of the Department of Humanities at the Air Force Institute of Technology in Dayton. As our guest editorial, we are happy to publish Dr. Smith's report on what the Dayton Chapter's Education Committee, of which he is chairman, is doing to interest high school students in our profession.

A "HOW TO" FOR EDUCATION COMMITTEES

STWE has a national education committee, and most chapters have their own education committees. Among the duties assigned these committees is cooperation with high school teachers and students. But just what is this cooperation supposed to achieve and what form does it take?

Let me offer a partial answer to the first question before I propose a more detailed answer to the second.

As I understand the objectives of the Society, one of the things we have organized to do is to increase the number and improve the quality of practitioners in our field. Another is to broaden the recognition of our profession. To get more well-qualified people to join us and to get ourselves better known, we must have good public relations. It's that simple. And one long-term solution to the problem is to acquaint high school students with us and our work. That's where the education committees come in.

But that's also where the second question I asked comes in: What can the education committee of a chapter do for the high schools that will reflect to the benefit of the Society?

That's the kind of question I asked myself when I accepted the chairmanship of the Dayton Chapter's education committee. (I was a perfectly logical choice, of course, since I'm an educator.) The first answer that occurred to me was just as logical: send speakers to sell the students during "Career Day" on the benefits of becoming a technical writer. But I found out indirectly that the high school teachers and students hear too many such sales pitches. Nearly all professional societies have education committees, and they all think alike.

I became aware of these facts through conversations with my colleagues on the faculty of the Air Force Institute of Technology. A count showed about 15 percent of us on education committees, and another count turned up 13 professional organizations in the local area, all trying to help the high schools, all in ignorance of each other's efforts, most ignorant of what kind of help is needed, and many ignorant even of what their capacities for help are.

COUNCIL OF EDUCATION COMMITTEES

To improve this discouraging situation, several of us formed a Council of Education Committees. We wrote the presiding officer of the local chapter of each of the professional societies (the Chamber of Commerce can usually supply a list) and asked that he appoint to our Council a delegate authorized to speak for the chapter about educational affairs. We described the duplicated effort, the lack of communication, the poor employment of resources in the work of most education committees trying to help science teachers. We proposed to do something about it. The response was excellent.

Then we had a series of meetings of the Council in which we worked out our objectives, discussed our resources, planned promotional activity, brought in high school science teachers to tell us what they needed, talked with school administrators, and delegated duties among ourselves. Everyone was enthusiastic, and we made considerable progress. Let me summarize our accomplishments and our plans.

Our objectives were (1) to plan and arrange tours; (2) to collect and distribute technical literature; (3) to arrange loans of technical equipment; (4) to arrange loans of technical films; (5) to render professional technical assistance; (6) to supply scholarship information; (7) to locate and enlist science-fair judges; (8) to furnish technical speakers; and (9) to offer career guidance.

In order to find out whether we could accomplish these objectives, we asked each delegate to survey the

(*Continued on Page 30*)

The Industrial Communications Organization

Richard M. Robinson

There seems to be no pattern to the organization of contemporary industrial publications departments, even in similar industries. I will explain this statement by referring to two companies with which I have been associated. The Missile Systems Division of Raytheon Manufacturing Company, for example, includes its publications group in a project services department. A specifications engineering group is also included in this department, but independent documentation and blueprint centers exist at each plant. On the other hand, at Convair-Astronautics, an organization of about the same size, the Service Publications Section is a part of the Service Engineering Department. Independent documentation and blueprint centers serve the entire division. The organizations are similar in that they have technical writers working alone, reporting to research, design, and development groups throughout the organization.

In 1953 the National Industrial Conference Board (NICB) published a report discussing the principles of efficient industrial organization and containing the organization charts of a number of well-known companies. This report was so well received that the NICB formed an Advisory Council of Organization Planning, consisting of 25 leading company specialists, to begin a major study of organization planning. As a result of this study the Board issued a series of reports on this important topic.

The approach taken in the NICB reports, and in similar reports issued by the American Management Association, was of necessity very general. All of these reports emphasize, however, the need for efficient communication within the company. I use this emphasis as the basis of my argument for a unified publications engineering–industrial communications department for the large-size (more than 1000 employees) engineering-oriented industrial organization.

It is impossible, of course, to completely define the reasons for differences in organization. Slight differences in company objectives often result in large differences of organization structure. Many of the problems which are characteristic of publications departments, however, seem to be solvable by centralizing the communications function of the company. So as not to be accused of rearranging an entire corporation for the convenience of the publications engineers, let me add that the reorganization in most cases would be slight and that the changes would be of advantage to all concerned.

DEFECTS OF PRESENT SYSTEM

The great majority of complaints often voiced by the publications engineers can be placed under one of the following three categories:

1. Lack of cooperation from originating engineers.
2. Difficulty of information retrieval.
3. Lack of professional standing and advancement possibilities.

The first problem, lack of cooperation from originating engineers, being most concerned with human nature, is naturally the most complex. (The term *originating engineer* is used in this article to refer to the engineer who originates the information to be presented.) It stems, to a great extent, from the lack of knowledge by both publications engineer and originating engineer of the line and staff relationship between them. This confusion is caused by the fact that the publications department is often called upon to perform both line and staff functions, and the individual publications engineer and his supervisor are often confused as to which is being performed at a given time.

I know of several publications engineers who have been criticized for errors which remained in edited reports on the insistence of the originating engineers. These writers, having once been criticized, have on subsequent occasions argued long and loud with the originating engineer concerning the phrasing of his report. The originating engineer, who justly believes that his report should be his own responsibility, is thus often antagonized by the "criticizing, time-wasting technical

writer." He thus tries to avoid contact with members of the publications department — a contact which is necessary not only for the publications department service function in editing reports, but also for proper carrying out of the prime responsibility of the publications department: the production of handbooks.

Animosity toward the publications engineer would certainly be lessened if each writer were always told exactly which function he was expected to perform. If he is to aid in the writing of a report he is exercising purely staff, or advisory, functions; and the originating engineer must assume full responsibility. The publications supervisor should recognize the minor role of the writer and should judge the report with that in mind. A handbook, however, is the product of the entire company and should be prepared as the line operation, and full responsibility, of the publications department. A publications department which has maintained good relations with the other engineering groups will usually have no trouble in getting engineers to supply it with information which is not included in any reports. A publications department that, in addition to maintaining cordial relations with the other departments, actually supplies a service considered more desirable than that of criticizing reports will naturally receive an even greater amount of cooperation.

INFORMATION RETRIEVAL

The second problem of technical writing, that of information retrieval, is a sore one not only to the publications group but to all engineers in the large organization. Duplicated effort results in low morale for the engineers involved, as well as loss of money to the company. Unfortunately, owing to the nature of his profession, the publications engineer, whose job depends on transfer of information, is most affected by poor communication. Mrs. Ethaline Cortelyou, Literary Analyst with the Armour Research Foundation, expressed the importance of data retrieval to the technical writer when she said in her talk at the 1957 STWE Convention, "Both technical writing and technical editing are documentation functions as intrinsic parts of the fundamental function of the preparation of records or documents." It can be seen, then, that it was no accident that the Association of Technical Writers and Editors, one of the merging societies of STWE, received the backing of the American Documentation Institute during its formative years.

Many publications departments have established their own private libraries consisting of massive files of reports and illustrations. Keeping these files in order often becomes so large a task as to require the full time duties of a publications department employee. The operation of these publications libraries is seldom successful, both because of lack of storage space and inaccessibility of much original material. In any event, the operation of this library is a duplication of work which is being performed in one, or perhaps more than one, other department.

PROFESSIONAL STATUS

The third major problem of the publications engineer, lack of professional standing, is due primarily to the hybrid nature of his work. I know of an especially unfortunate situation where a publications engineer worked alone, as a member of an electronics design group. He was supervised and rated by the electronics design section head, who had little familiarity with the duties and relative performances of publications personnel. The morale of this writer, which was never very high because of his negligible chance for advancement, was suddenly lowered by the rumor of a cutback in manpower; he was sure that his *staff* position would be the first to be eliminated. The resulting anxiety noticeably impaired his performance. Fortunately the anxiety decreased when it became apparent that the rumor was unfounded.

PROPOSED COMMUNICATIONS ORGANIZATION

Figure 1 shows the organization chart of a unified publications engineering–internal communications department which would eliminate many of the problems that I have presented. The great responsibility of the general manager of the department cannot be overemphasized. A man in charge of the entire communications of an organization can too readily control it for his own benefit. Thus the man selected for this position must be either high in the management hierarchy or be carefully watched and controlled by those above him. Besides freeing executives from a supervision job, the placement of the general managership in a high position creates a goal to which the average professional man and specialist can aspire without leaving his specialty.

The general manager of the communications department has an ideal span of control of six sections. Of these, two — the publications engineering and specifications engineering sections — I call line sections. I consider the library, documentation, production, and public relations sections to be concerned primarily with staff functions. This division into line and staff, however, is fairly arbitrary since a great part of the work of the publications engineer is of a staff nature.

The exact nature of the organization of a communications department is, of course, dependent upon the industry it serves. In this model I have separated specifications engineering from publications engineering because it is fairly specialized and in most companies is a task large enough to require separate management.

The publications engineering section is divided into two major groups — a reports group to perform staff functions and a handbooks group to perform the line publications function. The reports group includes per-

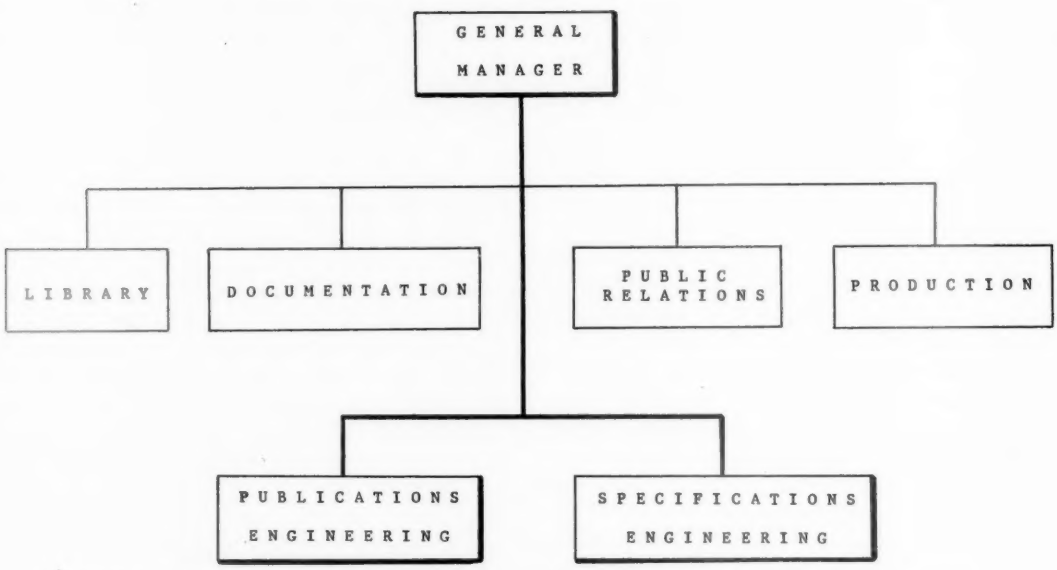


Figure 1 — Unified Publications Engineering – Internal Communications Department

sonnel who spend extended portions of their time with other departments at the request of the supervisors of those departments. These people are supervised by their publications department supervisor, who confers with the requesting supervisor concerning the publications engineer's work. Considerable care must be taken to avoid problems which might arise because of this dual supervision. I believe, however, that the advantage of focusing the publications engineer's responsibility on the publications department far outweighs any disadvantages that might occur as a result of the unorthodox nature of his supervision.

The staff groups of the communications department, represented by the light lines in Figure 1, though of service to the entire company, are of special importance to the line communications groups. Their close relationship ensures a maximum of cooperation. The publications engineering group, for example, is both a constant supplier and user of the library, which functions as the information center of the company. The library is responsible for distributing the usual collections of books and periodicals; in addition, it controls circulation of all company literature.

The documentation center is responsible for all duplication of information performed by the company. It has the responsibility of sending reproduced copy to the library for distributing and filing. It is also in charge of distributing blueprints, which because of the excessive amount of revision necessary, is a more specialized function than the library should handle.

The production group performs services of special value to the publications engineer. Art work and photography, which is done by this group, usually requires close contact between artist or photographer and the publications engineer.

The public relations group is included in the communications department because communications, though to the public, is its prime function. Close association with the sources of information make the communications department an ideal place for this group.

CONCLUSION

Many large industrial firms, after outgrowing their physical facilities, have moved some of their departments to outlying locations. Very often the publications department is among the first to move. The publications engineers are thus faced with the difficult and somewhat ludicrous task of physically removing information.

In the communications organization presented I have attempted to show the importance of publications engineering to industrial communications and the fallacies of removing it from the place where it is most needed. It is up to the individual publications engineers, and especially the publications supervisors, to convince management of the central, *line* importance of an industrial communications department. Ω

About the Author . . .

RICHARD M. ROBINSON *is a graduate student in the technical writing program at Rensselaer Polytechnic Institute. He graduated from Rensselaer in 1956 with a B.S. in physics and has worked as a technical writer for both Convair-Astronautics and Raytheon's Missile Systems Division.*

Writing and the Study of Grammar*

W. Nelson Francis

What bearing does a knowledge of grammar have on the practice of writers?

There is a stock answer to this question; an inaccurate one, as I hope to show, but nevertheless held by perhaps 90 percent of the practicing English teachers on all levels from grade school to graduate school, and by something very close to 100 percent of the general public. In its simplest form this answer maintains that good grammar makes good writing and bad grammar makes bad writing, and hence to turn bad writing into good you must correct its grammar. Or in somewhat more sophisticated form: good writing is always characterized by good grammar, so that improvement or correction of grammar is one step toward good writing. As a sort of backward corollary from this, the idea prevails that since bad writing is more prevalent than good writing, bad grammar is more prevalent than good grammar, and hence more *natural* than good grammar, which is difficult and only to be attained by study. Let me quote from one of the most professional of writers, W. Somerset Maugham (*The Summing Up*, Mentor edition, pages 28-29):

> English grammar is very difficult and few writers have avoided making mistakes in it. So heedful a writer as Henry James, for instance, on occasion wrote so ungrammatically that a schoolmaster, finding such errors in a schoolboy's essay, would be justly indignant. It is necessary to know grammar, and it is better to write grammatically than not, but it is well to remember that grammar is common speech formulated. Usage is the only test. I would prefer a phrase that was easy and unaffected to a phrase that was grammatical. One of the differences between French and English is that in French you can be grammatical with complete naturalness, but in English not invariably. It is a difficulty in writing English that the sound of the living voice dominates the look of the printed word.

Note the assumption that "a phrase that (is) easy and unaffected" is likely not to be "a phrase that (is) grammatical," at least in English. With all deference to Maugham's master craftsmanship as a writer and his lifetime of devotion to the art of writing English, I must say, speaking as a linguist, that most of that paragraph is nonsense. It is the kind of nonsense that English teachers can be just as guilty of as professional writers or the amateur general public. Here is a solemn pronouncement from a freshman composition text published in 1948:

> (Grammar) is highly abstract, and therefore for many students hard to grasp; it is complex; it is something which in part conforms to logic, and therefore can be reasoned out, but in part follows not logic but slowly developed usage. It can be wholly conquered only through long, consecutive, thorough study. (Thomas, Manchester, and Scott, *Composition for College Students*, fifth edition. New York: Macmillan, 1948, page 5.)

This quotation suggests the reasons for the inadequacy of the stock answer that to turn bad writing into good you must correct its grammar: This answer confuses grammar with three other and different things that should be carefully distinguished. These are *logic*, *usage*, and *style*.

GRAMMAR AND LOGIC

Let us take two normal and natural English utterances, almost identical but with a slight difference in form that indicates a definite difference in meaning:

> He's here now, isn't he?
> He's here now, is he?

In both cases a statement is made, immediately followed by a question — hardly a logical way to proceed. Logic certainly would say, "Either make a statement or ask a question, but don't do both in one utterance." Furthermore, in one case we make a positive statement, "He's here now," and follow it with a negative question, "isn't he?" Logic would find this completely confused. Yet it is perfectly good grammar, and the fact that grammar allows it alongside the more logical pattern of positive statement followed by positive question permits us to make a nice distinction of meaning. Thus "He's here now, isn't he?" is the question we would ask if we thought he was here but wanted to make sure; whereas "He's here now, is he?" ex-

*Presented at the STWE Sixth Annual Convention, Washington, November 17-18, 1958.

presses some surprise and perhaps displeasure in the discovery of his presence. I will allow you to develop for yourselves the contrasting meanings of two other grammatical possibilities: "Is he here now?" and "Isn't he here now?"

The following illustration should make clear the futility of applying the test of logic to grammar. Consider two question-and-answer sets:

Do you like mountain-climbing? No.
Don't you like mountain-climbing? No.

Logic would certainly say that the second question is the reverse of the first, being its negative, so that if the same answer is given to both, the second answer must mean the opposite of the first. Therefore, concludes logic, the person who answers "No" to the question "Don't you like mountain climbing?" must really like it because he disagrees with the negative question, and logic tells us that two negatives make a positive. But grammar here clearly overrides logic; any native speaker of English knows that "No" is the negative response to both a positive and a negative question.

GRAMMAR AND USAGE

The distinction between grammar and *usage* is not quite so easy to see as that between grammar and logic, because in one sense, at least, grammar is founded upon usage. That is, if we define usage as "customary mode of behavior" and recognize that grammar is simply the customary way of putting words together to make larger utterances, it is clear that grammar is a kind of usage. This is presumably what Maugham means, in the paragraph quoted previously, by the statement that "grammar is common speech formulated." But he immediately goes on to suggest that an "easy and unaffected phrase," hence presumably one sanctioned by usage, is likely to be ungrammatical. In other words, there must be some other test of grammaticalness which is stronger (in Mr. Maugham's view) than usage.

In the narrower sense in which the terms are used by linguists, the distinction between usage and grammar is primarily that between isolated items and systematic patterns. Let us take for an illustration a well known case of divided usage, as illustrated by these two utterances:

This data is reliable.
These data are reliable.

To the grammarian, the interest in these two utterances lies in the fact that English has two patterns into which large numbers of words may be fitted according to certain systematic interrelationships. He would first abstract the patterns, coming out with some such formulation as:

This . . . is . . . .
These . . . are . . . .

He would then remark the dependent relationship, or concord, of the first and third item in each pattern: that is, *this* goes with *is* and *these* goes with *are*. He might explore this by making some substitutions and testing them against the reactions of a native speaker, who might or might not be himself. He would find that he could substitute *that, a, one,* or *much* for *this;* and *those, both, six,* or *many* for *these;* while *the, some,* and *all* could be substituted for either one.

Next he might turn his attention to the kinds of items that could be put into the first blank in each utterance. He would find that there is a large class of words which could fit into both utterances, but with a significant formal adaptation in the second one; thus while *cat, dog, house, ox,* and *mouse* will go into "This . . . is . . . ," they must be altered to *cats, dogs, houses, oxen,* and *mice* in order to fit into "These . . . are . . . ."

Exploring farther, he would discover another, smaller group of words which would fit only the first pattern and could not be adapted to the second; among these would be *weather, heat, empathy,* and *asparagus.* Yet another small group fit only the second, including words like *trousers, scissors, cattle,* and *dramatis personae.* A fourth set could be put indiscriminately into either pattern without formal alteration; here would be words like *sheep, fish, deer,* and *Chinese.* Each of these groups he would call a syntactic form-class; his interest is in the patterns and the system.

The question as to whether it is correct to say "This data is reliable" or "These data are reliable" is of no grammatical relevance; it is simply a point of usage. The grammatical system of the language permits either pattern; usage determines whether *data* belongs to the same form-class as *weather* and *heat* or to the same one as *scissors* and *cattle.* This is a matter of little concern to the grammarian, since it doesn't affect the basic patterning of the language either way. But if usage should sanction "This data are reliable" he would sit up and take notice, because there would now be a new pattern and a new form-class (containing only the one word *data*) to be taken account of. In the linguistic sense usage is concerned with individual items and grammar with generalized patterns.

GRAMMAR AND STYLE

The third thing that is often confused with grammar is *style.* As a rough rule of thumb for making the distinction between points of grammar and points of style, we may say that if one of two ways of saying something conforms to the systematic patterns of the language and the other does not, the choice between them is a matter of grammar; but if both the alternatives so conform, the choice between them is a matter of style. Offered a choice between "she loves me" and "she me loves," we reject the latter as ungrammatical because it does not conform to the word-order patterns of English grammar. But the choice between "she loves me" and "I am loved by her" is a matter of style. Either expression is quite in accord with English grammar. Our choice

between them must be based on a delicate discrimination of their differences in shade of meaning, emphasis, and rhythm, with regard to the context in which they are to appear. We may be guided by some such general directive as "Never use the passive without a reason," but this is a rhetorical axiom, not a rule of grammar.

The same may be said of some of the other notorious cruxes like the split infinitive and the dangling participle. Both of these are quite in accord with English grammar, so that the decision as to when to use them is a rhetorical one, involving not a knowledge of grammar but a sense of style. Some people avoid the burden of making such discriminations by adopting the simple policy of never using these constructions at all. This is the safe but dull course; writers who always play it safe will never shock their readers' sensibilities, but they may not keep them awake, either. They are like those who solve the problem of temperance by becoming teetotalers, thus assuring themselves that they will never get drunk, but closing the door on a good deal of innocent fun. The analogy may be pushed a bit farther. Just as the teetotaler is likely to attribute his shirking of the decision as to how much is enough to high moral character, so the writer who avoids all split infinitives in order to be sure to avoid the bad ones usually rationalizes his rhetorical timidity as a high standard of grammatical correctness.

TYPES OF KNOWLEDGE

One more point must be made before we can go back and attempt an answer to the question "What bearing does a knowledge of grammar have on the practice of writers?" Before this question is really meaningful, we must settle an ambiguity in the word *knowledge*. We use this word to describe two rather different things, which I call *operational* knowledge and *theoretical* knowledge. By operational knowledge I mean the knowledge of how to manipulate some set of materials, objects, or controls so as to produce foreseen and desired results. By theoretical knowledge I mean the knowledge of how these entities act upon one another and why certain combinations or movements under certain environmental conditions produce predictable results. The difference may be illustrated from many familiar fields. Millions of people who are able to drive a car under all sorts of conditions and with great operational skill haven't the slightest idea as to how the motor, the steering system, the brakes, and the transmission are put together. Very few cooks could tell you the chemical reactions that make bread rise. Most of our knowledge is operational; even if we do get a smattering of theoretical knowledge along the way, we often forget it while continuing to perform the skills to which it relates. Many an engineer continues to use his slide rule efficiently, though he would be unable to give a lecture on the theory of logarithms. Operational knowledge, in other words, does not imply theoretical knowledge.

The converse is also true. A mathematician who can give a learned lecture on number theory may be much slower and less accurate than a grocery clerk at adding up a column of figures, and a piano builder may not be able to play a note. Or to bring the discussion back to our own field, a great poet may be totally ignorant of theoretical grammar, and a grammarian may have an atrocious prose style. Speaking broadly, we can say that theoretical knowledge is analytic, systematic, and intellectual; whereas operational knowledge is synthetic, habitual, and practical.

We are now in a position to ask our basic question with somewhat more refined use of terms. When we speak of a knowledge of grammar, we must decide whether we mean an operational or a theoretical knowledge. An operational knowledge of grammar would mean command of the skillful use of the variety of constructions and sentence-patterns of our language. Notice that this does not necessarily mean a dictionary-like knowledge of the degree of acceptance accorded by good writers to various items of usage, though the skilled writer usually has considerable knowledge of this sort. Nor does it mean the power to organize our materials in logical and effective paragraphs and essays; such matters go beyond grammar into the province of rhetoric.

A theoretical knowledge of grammar, on the other hand, means understanding of the analytical and codified description of the constructions of English, complete with fine distinctions, technical vocabulary, descriptive generalizations, and lists of exceptions to them, and all the other material found in a grammar book. This kind of grammar is the province of the grammarian.

KNOWLEDGE APPLIED TO WRITING

Our question has then resolved itself into two, which must be separately answered. The first is "What is the bearing of a skillful command, or operational knowledge, over the higher levels of language structure on the practice of writers?" The answer is obvious. Such command is one of the four essential attributes of the good writer, the other three being an equivalent command over the vocabulary, the ability to marshall materials into logical and effective order and proportion, and a refined sense of the niceties of rhythm, sound, balance, timing, figurative language, and all the other details that make up the esthetics of style.

The second version of our basic question is "What is the bearing of a theoretical knowledge of the branch of structural linguistics dealing with the units of discourse larger than the word upon the practice of writers?" The answer again seems obvious to me, though

even now it may come as a surprise to you. Such theoretical knowledge has no bearing at all upon the practice of writers. As the strongest evidence I know how to cite in support of this statement, I may say that not once in the writing of this paper, which has been far from an easy job of writing, did I resort to the technicalities of theoretical grammar to help me choose among alternative ways of putting a sentence. This in spite of the fact that as a part of my professional training I have a more than average knowledge of theoretical grammar. The hesitations and blank moments facing a motionless typewriter have all been due either to selection among words or selection among the many alternative ways, all of them quite grammatical, in which a given idea may be expressed. My operational knowledge of the patterns of English has been unconsciously at work, along with my operational knowledge of the writing system, including spelling and punctuation, and my operational knowledge of touch-typing. But the theoretical or thinking part of my mental equipment has been free to concentrate on the by-no-means easy and perhaps (you will be the judge) unsuccessful attempt to organize and project my ideas.

I have dealt with two kinds of knowledge of two kinds of grammar and have attempted to make the point that one is essential to the practice of writing and the other one irrelevant to it. This is an extreme position and one that may have to be qualified somewhat as we look at the way in which these two kinds of knowledge are usually acquired. The operational knowledge of grammar is acquired almost entirely through practice, some of it under more or less effective supervision. We learn to talk by talking, as we learn to walk by walking or to ride a bicycle by riding. Similarly, we learn to write by writing. Most of us had a pretty complete command of the repertory of English syntactic patterns before we ever went to school; in fact, we might not have been accepted into school if we had not had. What we needed was to develop a reliable set of habits which would see us through whatever complex language problems we might have to meet. Our subsequent development in the command of language, other than the vast increase in our vocabulary, has been in learning to manipulate larger and more complex combinations of syntactic patterns without getting tangled up.

On the other hand, the theoretical knowledge of grammar, like most theoretical knowledge, is most efficiently acquired by systematic and hard study of materials organized in the clearest and most easily teachable form. Like any other theorist, the budding grammarian should study critically rather than accept blindly what is given to him; and when he has mastered a body of doctrine, he may see fit to amplify it, extend it, correct it, or throw it out altogether in favor of a new system of his own devising. He is, in short, no different from the chemist, the sociologist, or the metaphysician. But all of this has very litlte to do with his writing practice.

CONCLUSION

In conclusion, I would sum up my advice to the professional writer, or the apprentice to that trade, this way. Let him not bother his head about theoretical grammar unless he finds that his style is pedestrian and monotonous and that this monotony comes from a too limited repertory of phrase and sentence patterns, not from other causes like poverty of vocabulary or commonplaceness of thought. The theoretical study of grammar, like the theoretical study of prosody by the poet or of counterpoint by the composer, may serve to increase the range of constructions and sentence-patterns over which he has easy operational control, and thus introduce a greater variety and grace into his writing. But I should advise him to resort to theoretical grammar only as a last measure of desperation before giving up the profession completely. The only really effective means to competence in writing are endless careful and critical reading, alternating with endless practice in writing, with or without critical supervision. Devoted as I am to the study of grammar, I could not deceive technical writers, even if I wanted to, into thinking that such study is of any great practical value in their work. Ω

About the Author . . .

DR. W. N. FRANCIS *is Professor of English at Franklin and Marshall College, Lancaster, Pennsylvania. Among his publications are two books, "The Structure of American English" and "The Book of Vices and Virtues" (edited from three extant manuscripts). He has also had many articles published in the better-known literary and speech journals.*

Dr. Francis is a member of the Modern Language Association, the Linguistic Society of America, the College English Association, and the Conference on College Composition and Communication.

Evaluation of the Report*

Technical Evaluation	Report Evaluation
Total Report	
Does the total report: Fulfill original objectives? Cover all points essential to the main purpose of the report? Is each part of the report in proportion to the complexity or significance of the corresponding parts?	Does the total report have: Information arranged and presented in a sound and effective manner? A suitable title page giving essential information? A table of contents and list of illustrations which are complete, accurate, and easy to understand?
Preface	
Does preface: Explain the report accurately? Explain any change from the original objective during the development of the report? Give an accurate account of the work experience related to the report? Acknowledge the help of those who contributed to the preparation of the report?	Does preface: Explain the reasons which gave rise to the selection of the report subject? Give a clear account of experience relating to the report subject? Make acknowledgments in proper form; name, title, and type of aid?
Introduction	
Does the introduction: State the problem so that it corresponds with the objectives? Give the main steps of the procedure accurately?	Does the introduction: Give enough background information so that the nature of the report is easily understood? State the problem clearly and without ambiguity? Make clear the main steps in the procedure? State the specific purpose of the report? Present the order of discussion for the remainder of the report?
Conclusions	
Are conclusions: Significant, pertinent, and valid? Substantiated by the data presented in the report? Appropriate to the report? Supplemented by a summary of findings and recommendations when necessary?	Are conclusions: Identified by an opening statement? Grouped with general before specific conclusions? Presented by including page numbers of substantiating text or grouped according to sections of the text so that the reader can locate substantiating data for any statement? Accurately grouped and labeled as conclusions, recommendations, or findings? Presented in lists, charts, graphs or other suitable means of summarizing?
Main Discussion	
Does main discussion: Describe any tests, equipment, or procedures used with sufficient completeness and accuracy so that the reader could use the information as a guide to a similar problem? Give specific sources of all information? Give complete and exact figures for all results and omit inexact information such as "many," "few," and "more"? Use technical terminology accurately?	Does main discussion: Identify the area to be considered? Indicate the order in which each section is arranged? Explain clearly how data were gathered, processed, and interpreted? Relate data clearly to the conclusions reached? Give exact source of information in proper form, including footnotes and bibliography when needed? Use precise language? Develop the discussion in a logical and clear order so that the material is easily usable? End with a summary or grouping of conclusions developed in the section?
Illustrations	
Are illustrations: Provided when necessary as determined by the nature of the data or discussion? Consistent in quality with the text discussion? Accurate in their interpretation? Sound in the techniques used?	Are illustrations: Referred to in the text? Placed near text reference? Reproduced properly? Clearly numbered and labeled? Used when desirable as a summary device?
Appendix	
Does the appendix: Contain essential supporting or supplementary material? Contain all material which belongs there?	Does the appendix: Contain appropriate material? Have a usable arrangement?
English	
	Is the English: Accurate in following the conventions of language? Clear, precise and readable?

*Developed by Charles L. Tutt, Jr., of the General Motors Institute, Flint, Michigan.

A Method of Cataloging Changeable IBM Type Bars

Virginia Brennan

Although a large number of changeable type bars are now available for IBM typewriters, no plan appears to have been worked out commercially for handling them. The procedure described in this article takes care of more than 100 type bars and may prove helpful to those who are considering the purchase of a number of extra keys.

The problem of handling the type bars is twofold: (1) it is necessary to find a compact and easily accessible device for holding the keys and (2) a system has to be worked out for arranging them in some kind of order so that they may be easily located.

The factors involved are more easily understood after inspection of the diagram of the keyboard (Figure 1). The diagram represents a standard IBM keyboard with two extra keys, positions 0 and 43, located at the beginning and end of the top row, making a total of 44 key positions. Seventeen of the keys are changeable. The remainder, which contain the letters of the alphabet and the semicolon and colon, are permanently attached. Beneath each changeable key the position number is indicated. Since the type bars are formed to fit into the curved type basket, the keys for each position have a different slant and are not interchangeable. The position number of each key is engraved on its base. Some positions on the typewriter discussed here have as few as two additional type bars, whereas others — for instance position 43, which is an extra key — have as many as 20.

DEVICE FOR HOLDING TYPE BARS

The metal leaves from a Linedex were modified to provide a simple and convenient device for holding the

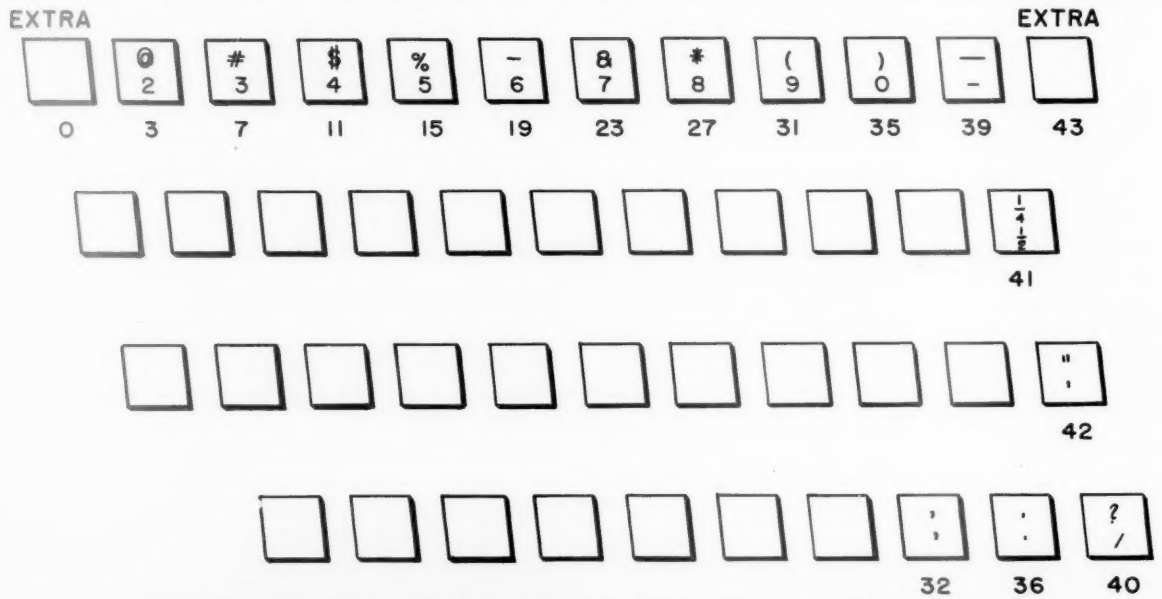


Figure 1 — Standard IBM Keyboard Showing Changeable Type Positions

Figure 2 — Keyholding Device Shown in Relation to Typewriter and Secretary

type bars. The leaves, measuring 7½ by 12½ inches, were removed from the stand and placed on a plate which could be attached to the wall within easy reach of the typist, as shown in Figure 2. The plate holds a top and bottom metal bar from which the leaves are hinged. Each bar has a built-in groove with slots ¾ inch apart, in which the pins of the leaves are attached. The ¾-inch space between leaves allows ample room for the type bars. Extending the lower end of the plate a short distance out from the wall causes the leaves to slant backward slightly so that they hang in a more stable manner. The slight backward tilt of the leaves allows the type bars to be located and taken from the hooks more easily.

The type bars are arranged in two horizontal rows of five each per leaf in the order in which the positions appear on the keyboard, starting with the top row of keys. The type bars were hung in the following manner: Holes were drilled through the Linedex leaves in the spots at which the type bars were to be hung. Small brass brads or nails of a size to fit the grooves of the type bars were driven through the holes, and the heads of the nails were soldered in place on the back. The nails were then bent upward to form hooks. Space was left below each row of keys for labels to designate the characters. The type bars are placed on only one side of each leaf, and the back of the leaf is covered with felt for the protection of the type. Each leaf of type bars faces a felt-covered back except the two center leaves, which face but fall away from each other.

LABELS

Plastic label holders were glued to the leaves under each row of type bars. Circles were drawn on the labels to represent the keys, and the following information was typed in. The position number of each type bar was placed at the side, and below were typed such notations as were needed to describe the kind of character. For example, if the character was a subscript, which is two-thirds of the regular key size, the notation "C-1" was added. These descriptive notations are taken from the IBM catalog from which type bars are ordered. If the top character was being described the notation was placed on the left; if the lower character, the notation was placed on the right; and if both characters were involved the notation was placed below in the center.

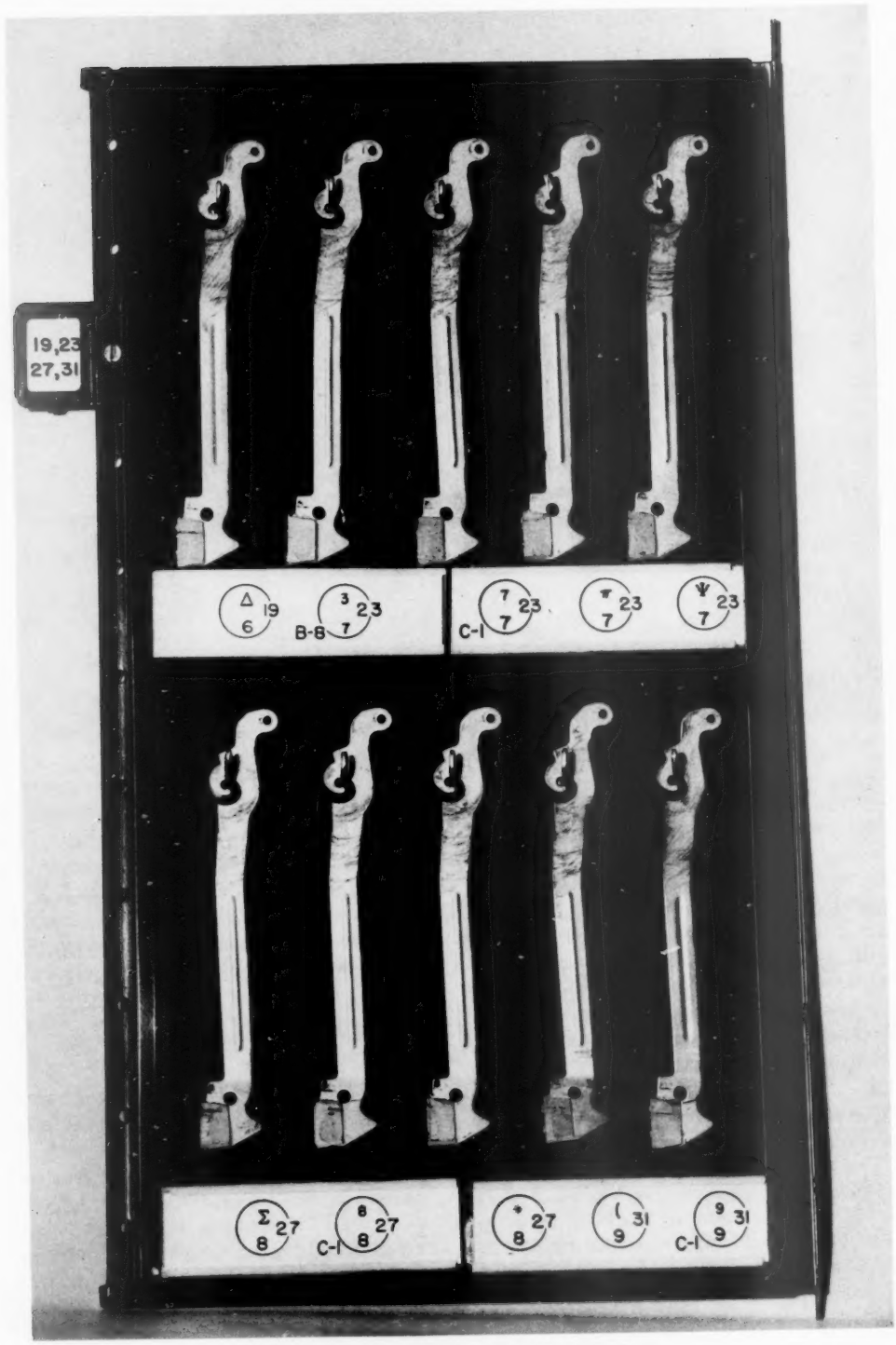


Figure 3 — Leaf of Keyholding Device

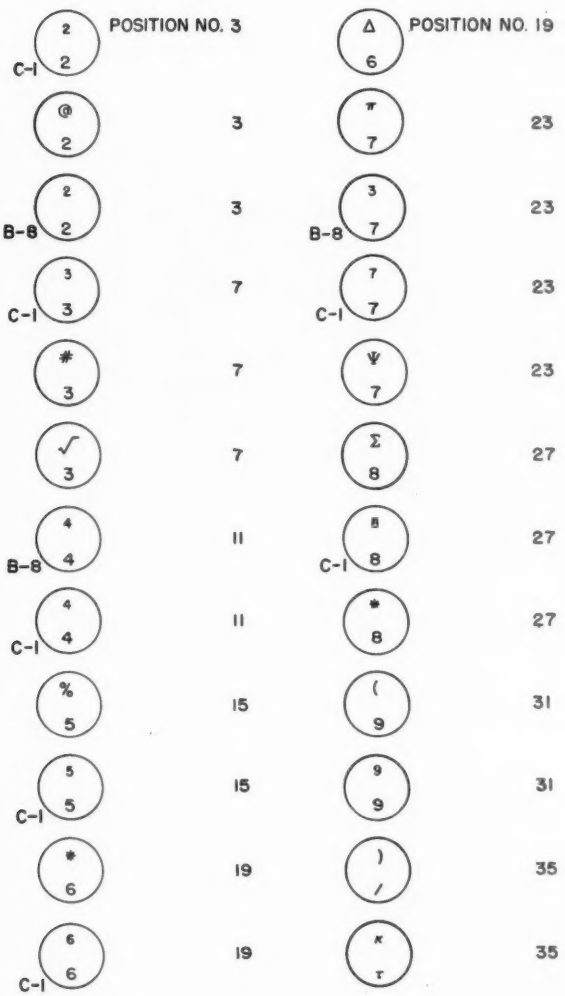


Figure 4 — Page from Key Index

To facilitate locating the type bars, the position numbers of the keys mounted on each leaf were inserted in the small square label holder attached to the edge. Figure 3 shows a close-up view of one of the leaves.

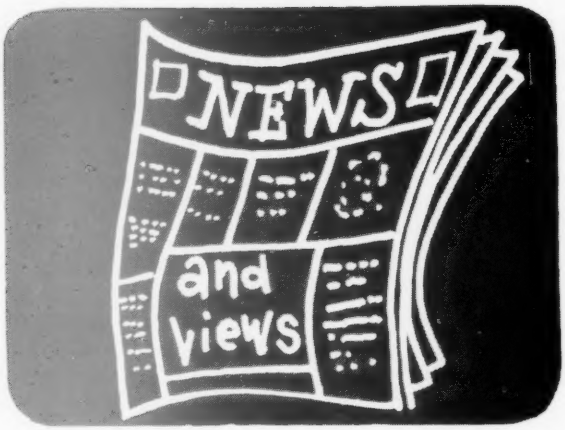
INDEX

An index was considered necessary to determine just what keys were available. A master copy of a sheet containing two vertical rows of blank circles was made, and a supply of such pages was run off. The same information as that contained on the labels was then typed in the circles with the position number or numbers placed at the side (see Figure 4). To increase flexibility, it is sometimes desirable to order an often-used key for two or even three different positions.

A rough order of itemizing the keys was decided upon as follows: First, all the number keys (positions 3 through 39) were listed in order of position. Next, a list of special characters was made irrespective of position. Then the special characters covering a complete type bar, such as Σ, were included. Finally, the Greek characters were arranged in approximate alphabetical order. This index was put in a cover and is kept on the secretary's desk. Ω

About the Author . . .

VIRGINIA BRENNAN *is employed as Group Secretary in the Cryogenics (Low Temperature Physics) Group of the University of California, Los Alamos Scientific Laboratory. She has had considerable experience in typing technical papers requiring many special symbols for publication in scientific journals and for presentation at meetings. She has an A.B. degree from the University of Illinois with a major in journalism.*



The Special Libraries Association (SLA) has provided us with several items including announcements of their new executive secretary, the SLA scholarships, and a new source book of pictures.

During the recent 50th Anniversary Convention of the Special Libraries Association, Mrs. Margaret H. Fuller, retiring SLA president, announced at the annual business meeting on June 3 that the Executive Board had selected Bill M. Woods to succeed Marian E. Lucius as the Association's Executive Secretary. Mr. Woods began his new duties at SLA headquarters August 1.

Head of the Processing Section of the Map Division of the Library of Congress for the past year, Mr. Woods was previously map librarian and faculty member of the University of Illinois for ten years. He received his B.A. in geography and English from Peru (Nebraska) State Teachers College in 1945 and his B.S. in library science at the University of Illinois in 1947. After further graduate work in geography at the University of Nebraska, he returned to the University of Illinois, where he received his M.S. in library science in 1953.

A member of SLA since 1947, Mr. Woods has served on the Association's *Translation Monthly* and nominating committees and as secretary of the Advisory Council. He has also held various positions in the Illinois Chapter and has been particularly active in the Geography and Map Division, having served as chairman and associate *Bulletin* editor. Mr. Woods was the joint recipient of the Division's 1959 Honor Award for "outstanding contributions to the field of special librarianship."

SLA SCHOLARSHIPS

SLA offers *four* $1000 scholarships for the academic year 1960-1961 to be used for graduate study in librarianship leading to a degree at an accredited library school. Those eligible are college graduates with present or past experience in a special library or recent college graduates and college seniors wishing to enter the special library profession.

Applications may be obtained from the Executive Secretary, Special Libraries Association, 31 East 10th Street, New York 3. They must be received by February 15, 1960, by the Chairman of the Scholarship and Student Loan Fund Committee.

GUIDE TO PICTURE SOURCES

The first authoritative guide for locating and procuring pictures in the United States and Canada has just been issued by SLA. Entitled *Pictures Sources: An Introductory List*, this 128-page book has been compiled by picture librarians for professional users of pictures, photographs, and other forms of visual communications. It is designed especially to meet recurring requests from editors and publishers, artists, advertising agencies, television producers, researchers, and similar users.

The guide lists 398 sources classified under 14 major categories. Picture sources are fully described. Each entry lists the size of collection and type of material included; subjects and dates covered; conditions of use; and the address, telephone number, and name of the picture librarian. Detailed subject and source indexes simplify location of references.

Subject categories are: General Picture Collections; Commerce and Industry; Commercial Agencies, Dramatic Arts, and Music; Ethnology and Religion; Fine, Graphic, and Applied Arts; Geography of the Continental United States; Geography Outside the Continental United States; Health, Welfare, and Education; History; Military Subjects; Natural History; Transportation; and Specialized Subject Collections. Each chapter suggests additional sources and bibliographies for particular subject areas.

Picture Sources: An Introductory List was compiled under the editorship of Heley Faye as chairman of the SLA Picture Division's Directory Committee; she is also Chief Picture Editor of Harcourt, Brace & Co., Inc., New York. The guide is available at $3.50 per copy from Special Libraries Association, 31 East 10th Street, New York 3.

THE ENGINEER VERSUS THE ENGLISH LANGUAGE

A. H. Beiler, section head, Technical Education and Training, American Electric Power Service Corporation, New York, sent us a copy of some material he prepared for a talk to company trainees on the subject of operating instructions for power-plant equipment. The material was compiled as Mr. Beiler reviewed technical articles that were to appear in the power-plant instruction

books. He came across some startling and often amusing examples of how engineers use — and misuse — the English language.

Practically all these articles were written by engineers, yet they showed evidence of (1) fuzzy and illogical thinking; (2) a poor command of English; (3) a tendency to wordiness — using a dozen words where one or two will do; (4) "overwriting," i.e., using needlessly technical or pseudo-technical terms; and (5) confusing a quality with a thing (e.g., "high steam temperature enters the pipe").

The material Mr. Beiler supplied was arranged in tabular form. Excerpts from the table follow.

How It Was Said	*How It Was Edited*
Certain fire systems require a pressurized system in order to start.	Certain fire systems require the existence of water pressure to start.
Push button control of each (ten total) tripper is blocked.	Push button control of the ten tripper gates is blocked.
Conveyor III will be placed under automatic control and automatic control of Conveyor IV is blocked.	Conveyor III will be placed under automatic control and Conveyor IV will be prevented from operating automatically.
The hopper level alarms utilize electrical circuits and relays to activate the annunciators.	The hopper level alarms operate the annunciators.
The line connects to the ash disposal pipe and flows to the ash basin.	The line connects to the ash disposal pipe leading to the ash basin.
Erosion difficulties were experienced with the valves when high-pressure water was throttled across them.	The valves eroded when they were used to throttle high-pressure water.

PUBLICATIONS MANAGEMENT

Navy Management Review for July (NAVEXDS P-910, vol. IV, no. 7) has an excellent special feature on Publications and Their Management. It is well worth reading.

TECHNICAL WRITING — TECHNICAL OR WRITING?

Just what is technical writing? Many different definitions have been given in the past, and there is every reason to believe that new definitions will continue to be proffered by our fellow STWE members. Here is another view on the definition of technical writing. It comes from Bruce Lewis, a technical writer in the proposal preparation department of Avco in Cincinnati.

How does technical writing differ from other writing? Can anyone become a technical writer, simply by declaring himself in the race . . . or are special training and abilities necessary? As a practicing novelist and professional technical writer, I will pour my gasoline onto this long-smouldering fire.

Beginning with a common denominator, we may ask, "What is writing?" In its most ancient and basic form, it is simply a means of communication. This holds true whether the content of the communique is smutty poetry or the highest form of abstract, intellectual thought.

Going a step further, what constitutes good communication? In order to communicate intelligently, writing must be clear and as understandable as possible to the average reader.

To be understood best by the most people, it must be written in simple, straightforward language. It must be written for the busy modern reader whose time is limited and who may have only a minute between office appointments or phone calls.

One extremely important characteristic of an understandable communication is intelligence. It must be backed by clear, logical thinking — or be meaningless.

Now that we have established a basic definition of all writing, we might ask, "What is the purpose of writing?" The purpose is, obviously, to make the reader think the way you want him to. In short, to sell him something. The fiction writer attempts to sell an idea or a book, while the technical writer tries to sell a product or a service.

Thus far we have dealt with elements common to all writing. What then, is the difference between technical writing and other varieties? The obvious conclusion — there is no fundamental difference. A good writer is capable of writing anything, provided, of course, that he is interested enough to acquire the necessary knowledge and has a basic amount of aptitude in the field he chooses.

Technical writing ability implies, therefore, that the author is not a complete technical idiot, but is capable of absorbing sufficient background information to interpret his work correctly.

The requisite technical background depends upon the job at hand. A technical writer should have some specific knowledge of a science. Often, however, the greatest portion of his knowledge will be acquired from interviewing technical personnel or from reading general technical material. It will rarely be necessary for him to have a degree in engineering since his main function involves interpretation rather than research or design.

It is often argued that only an engineer can be a competent technical writer. It is true that an engineer can become a competent technical writer . . . but only if he can write. Can he express himself clearly and convincingly on paper? If he is incapable of doing so, then no amount of black magic is going to transform him into a good technical writer, no matter how exhaustive his technical knowledge may be. For it is not enough that he completely understand the material himself — he must be capable of communicating this knowledge to others, clearly and in a salesworthy manner.

(Continued on Page 28)

Formal Training for Technical Writers — an Industrial Viewpoint*

Paul I. Berman

In a recent book of philosophy, the author (Isaiah Berlin) contrasts the nature of the hedgehog and the fox: the hedgehog, the author tells us, knows one big thing, while the fox knows many things. Extending this essential difference in attitudes to our own field, it is, I think, obvious that the technical writer falls into the category of "fox." He does not need to know as much science as the engineer or scientist with whom he is working, or as much about writing and editing as a skilled slick magazine journalist, or as much about the graphic arts as an art director, or as much about typography and book production as a printer.

However, he does need some knowledge of all of these areas, as well as several others. In this lies the nature of the problem of formal education for technical writers: How do you train foxes in schools that are primarily geared for the mass production of hedgehogs?

The apparent answer to this question—and an answer that I must reject—is to design a special curriculum for the training of technical writers. I reject this approach for two reasons. First, and least important for our discussion, I feel very strongly that our colleges and universities are already too much degraded by vocationalism. Second, even should we decide that special curricula for technical writers are necessary, how do we determine just what specialties the incipient writer will need? For example, the writer of military manuals should, in addition to electronics, mechanics, and writing and editing, know about government contracts and specifications, mechanical drawings, maintenance techniques, test equipment and tools, parts cataloging, and offset printing—to name just a few areas of importance. A reports, or presentations, or sales writer would need entirely different bits of knowledge.

We could, of course, formulate a college program that would (1) cover all pertinent aspects of the publications and graphic arts industries, (2) provide the student with basic knowledge of a particular scientific discipline, and (3) offer the student training and practice in expository writing and some understanding of the use of the English language. Such a program would, I suspect, produce a very flimsy and hollow sort of education. Technical writing is not a profession in the precise sense that, say, medicine is a profession. We cannot expect a young person entering a college to decide that he wants to be a military-manual writer in the field of electronics, or a sales writer for the chemical industry, or an aviation writer for a trade journal. The opportunities in any such narrow specialty are too few, and the resultant education would be neither broad enough nor scholastic enough to lend any real professional status to the graduate.

OPTIMUM PROGRAM COMBINES SCIENCE-HUMANITIES

What, then, is the optimum program for a young person who wants to become a technical writer? The obvious second choice is a combined science-humanities program in a liberal arts college. Although the prospective writer cannot select the exact type of writing he will some day do, he can, of course, select his scientific area. In fact, the interest in a particular science, as well as a desire to write, should preferably precede the wish to be a technical writer. Thus a young man preparing to be a writer in the electronics industry would major in physics, taking most of his electives in electronics and mechanics. The argument against this is that the man with a B.S. degree in physics may not want to become a technical writer. To this I can only reply that, just as there is a substantial difference between a philosophy major and a philosopher, or a mathematics major and a mathematician, there is an equally broad gap between a physics major and a physicist. We cannot, of course, appeal to the latter—nor do we wish to. But for the science major—the man who has majored in science but has neither the devotion nor the creativity necessary for scientific research—technical writing can

*Presented at the STWE Sixth Annual Convention, Washington, November 17-18, 1958, and published in *Industrial Science and Engineering*, November 1958.

be an interesting and rewarding profession. I fully believe that if more liberal arts colleges were aware of the opportunities in this field, they would advise their science students of the possibilities of technical writing as a profession.

MINOR IN ENGLISH

This major in science would be combined with a minor in English. The minor field would stress contemporary British and American (with emphasis on the American) prose writers, and would supplement this emphasis with courses in expository writing. One new course I would suggest would cover technical exposition, and would be devoted to explaining how to combine illustrations and text to tell a technical story.

Such courses as mechanical drawing would be helpful if they were available at the college and could be integrated into the student's program. However—and I wish to stress this point—such courses are not essential. Courses such as drafting, graphic arts, and printing are useful. But if a college education is going to mean anything to a technical writer, either as a person or as a professional, we must keep the program of study relatively free of vocational-type nonessentials and emphasize a sturdy scholastic foundation.

We in industry would be most happy to find a man trained in science and engineering; skilled in writing and editing; with expert knowledge of printing and production techniques; educated in the methods, uses, and processes of the graphic arts; and with, perhaps, knowledge of photography, drafting, contracts, and military specifications. But, being practical men, we realize that we can and must be prepared to allow men to learn on the job, and that there are only certain absolutely necessary qualifications that the applicant must possess before he can be of use to us. Frankly, in my own department, training and experience in our field of interest—electronics—is our prime requirement. Training or experience in writing is our only other real need. We realize that training in these two fields does not necessarily make a technical writer; however, the most difficult part of becoming a professional in any field is integrating academic training with the many new concepts learned on the job.

FOUR-YEAR PROGRAM REQUIRED

To train a man successfully in the field of science and, at the same time, to instill in him a feeling for language and writing requires a full-time four-year program. Add to these two basic areas some useful electives in philosophy, logic and scientific method, psychology, social sciences, etc., as well as the many required courses in a liberal arts college, and we have indeed a crowded academic schedule. Moreover, we have a program designed to produce a well-educated well-rounded man who can readily fit into any type of technical publications group within his scientific field. What is most important, this man has sufficient scholastic training and mental discipline to allow him to advance himself in any field of technical writing he chooses.

The alternative to this type of program will produce a man who has a smattering of science, a bit of English, and an assortment of such courses as history of journalism, specifications, typography, layout, and printing. This man will have received preliminary training in those areas where we in industry would be perfectly willing to let him learn at our expense; in return for this, he will have left himself weak in those areas where industry has neither the time nor the inclination to train him. Such a man is merely a new type of hedgehog—while industry is badly in need of foxes. Ω

About the Author . . .

PAUL I. BERMAN *is presently a technical writing supervisor at Stavid Engineering, Inc., Plainfield, New Jersey. His experience includes the preparation and supervision of instruction books, proposals, engineering reports, and technical advertising literature. He also teaches an evening session survey course in Fundamentals of Technical Publications at Hunter College in New York City. He is a member of the STWE and of the New York Chapter's Professional Group on Management Practices.*

An Industrial-Sponsored Course In Technical Writing

J. L. Hamilton

The dissemination of technical information is a responsibility that should be shared by all technical people. In the past, management frequently mentioned this need, but now is demanding that its scientists and engineers become more competent as writers. However, some people say that nothing can be done about the situation. They feel that writing is a gift and that a person is born either with or without the skill. Others feel that writing ability is not too important. In spite of these opinions, the majority of management does feel the need for more effective written communication. Factory expansions and decentralization of engineering and development groups into smaller, unitary components establishes this need. These small groups become dependent upon each other for information or reports on unit developments and related activities.

For a report to be effective, it must be well written. Good writing requires exact, concise, coherent, and completely understandable information.

The statement is often made that "writing is thinking, and thinking must come before writing." This leads us to wonder whether technical people actually list their ideas before attempting to make an acceptable and understandable report. Will they know clearly and specifically what they are going to write, and will they state purposely the facts so that the reader will fully understand? This brings up another question of whether our technical people are good or poor writers. A general concensus is that the average technical person is a poor writer. Why is this? Surely it cannot be because of disorganized mind processes when systematic thinking is the very forte of the technician. Then it must be either a lack of the art of expression, or a resentful or superior attitude toward technical writing, or a failure to sense the reader's background.

If these are the reasons, then it is time to overcome them.

TRAINING IN TECHNICAL WRITING

The General Electric Company has taken a positive approach to overcome the writing deficiencies of its technical personnel by establishing and sponsoring a course in technical writing. The course is designed to give the student techniques and exercises in clear and effective communication. Broadly it includes the definition of functional literature, the problems in logic, the choice of materials, the demands made on the reader, and the writing and editing problems of internal communication or of journal publication.

The student is offered an understanding and appreciation of the mental processes and motivations involved in creating written ideas. He learns how his ideas can be made more acceptable to the reader. The approach to the writing problem is considered from the technical person's viewpoint, and, consequently, the program is recommended only for those employees with a science or engineering degree or for technicians with at least two years experience in industry. It will aid these people in developing the ability to clearly, concisely, and briefly present technical information in written form.

Thus the student of technical writing should, in effect, be able to organize his thoughts properly in preparing clear and concise written material. He should be able to formulate an effective plan of approach for writing his material with ample opportunity to analyze his writing for a continued improvement in clarity and expression. While organizing, analyzing, and formulating, he should extend his mastery of the English language and of grammar.

ORGANIZATION

The technical writing program at General Electric's Pittsfield, Massachusetts, Power Transformer Department is organized around the basic concepts and objec-

tives of the technical writing course and is known, with local modifications, as "Creative Engineering Writing."

The local classes are organized with approximately 15 students who devote 15 class periods, each of 2-hour duration, to the study and practice of good writing. Usually 1 hour of this 2-hour period each week is spent during company working hours, followed by the second hour on the student's time. Homework requires approximately 6 to 8 hours a week. However, there is one important offsetting or compensating feature — no cost to the student.

Each class period includes a writing assignment, a reading assignment, and one or more topics for discussion based on the reading assignment. The first two classes of the series are devoted to outlining the course objectives and organization; to discussing the "design" approach and writing in general; and to reviewing grammar, punctuation, and the essential elements of composition. The "design" approach to technical writing, as used by the company and the local program, is credited to Dr. James W. Souther, Assistant Dean of the College of Engineering, University of Washington. Dr. Souther actually developed the course in technical writing for the General Electric Company, and it is his course that has been adopted, with modifications, at the Pittsfield Works. The course outline, as modified, is shown in Figure 1.

The "meat" of basic technical writing starts with the third class period and continues for the next eight classes. Complete discussions are devoted to analysis, investigation, design, and application of technical writing. These are the basic steps applicable to all technical writing problems as outlined by Dr. Souther. Each of these four stages is presented and discussed separately to emphasize the factors to be considered and the steps to be followed in writing. Each discussion, though separate, flows smoothly to the next, imparting continuity to the course.

The final classes include discussions of specific types of writing, individual counseling, and a summary of class problems and progress. An important part of all classes is the criticism and discussion of individual writing.

WRITING ASSIGNMENTS

Writing assignments are varied. They can be as hard or as easy as the student makes them. Each assignment requires outside preparation, although the course is liberally sprinkled with class writing problems.

The major assignment, however, is one which involves considerable outside work. Each student is required to select a topic for a final paper which will be designed for publication. Several informal reports are required covering the topic selected and the "why," the writing situation, and the plan for gathering information. Another memorandum proposes an organization and explains why that particular organization was selected. It also includes a statement of the "core-idea." Still other reports are required describing the internal and external layout, the supporting illustrations, and the main ideas the paper presents.

As the student progresses with his final paper, he learns that the actual writing is a three-stage operation. First, he must write his paper, in accordance with the organization he set up. Second, he must check and modify the first draft. He finds that his real writing takes place during this rewrite stage. Third, his final manuscript copy is prepared and typewritten.

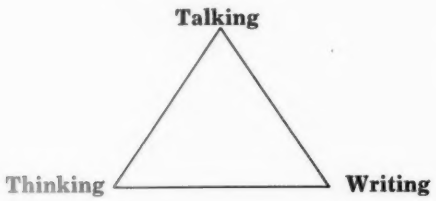
COURSE OUTLINE
CREATIVE ENGINEERING WRITING

1. Introduction
   a. Objectives
   b. Organization
2. Design Approach to Technical Writing
3. Writing in General
   a. Grammar
   b. Punctuation
   c. Elements of composition
4. Analysis
   a. Purpose
   b. Industrial role
   c. Audience
5. Library
6. Investigation
   a. Planning the attack
   b. Gathering material
   c. Evaluation of material
7. Design
   a. Determining content material
   b. Determining illustrative material
   c. Determining form
8. Application
   a. Applying the design
   b. Writing the paper
   c. Checking and modifying
   d. Style and mechanics
9. Individual Counseling
10. Summary of Class Problems and Progress
11. Progress Reports
12. Technical Reports
13. Technical Journalism
14. Other Writing Forms
    a. Letters
    b. Instructions
    c. Specifications
    d. Patents
16. Review and Summary

Figure 1

Usually some writing has been going on prior to his first draft, but actual consecutive writing takes place during this first stage. The beginning "leg work" may consist of thinking, talking about the topic, or writing notes on the subject. Some writers need to talk first, then think, and finally do the writing. Others may scribble notes at first and then think or talk about them. Still others ponder at length and then write notes. After that they can talk about them. No matter which sequence of steps a writer uses, a certain language pattern

is obtained. Each language pattern moves about a triangle formed by *thinking, talking,* and *writing* in either a clockwise or counterclockwise direction:



The first draft must be started some way, so it is best to make a tentative start and possibly make a change later. However, this draft should not be careless. It is a means, not an end, and for most writers should be a rather rapid writing of the material. A writer's paper will have more life and will reflect his thoughts more closely if it is written rapidly than if he pauses to check mechanics.

Few writers work so exactly that their first draft will represent the best of their capabilities. When freed from the problems of actual writing, a writer can go over his work and bring it up to desired standards. He should take the reader's point of view when revising, checking, or modifying. It is preferable to correct mistakes in the final draft during this second-stage operation rather than in the proof. This means a testing for material, for plan, and for mechanics of writing.

During the final stage, the manuscript copy is prepared and typewritten. This final copy for the printer should be made as accurate as possible. It should be painstakingly checked so that costly corrections will not have to be made by the printer.

MATERIALS

Three texts are used throughout the course. Two of these, *The Presentation of Technical Information* by R. O. Kapp (The MacMillan Company, 1957) and *A Guide to Technical Writing* by W. G. Crouch and R. L. Zetler (Ronald Press, 1954), are used as references. Incidentally, one of the assignments of the course is to write an abstract of Kapp's text.

The third text, and the one upon which the General Electric course is based, was written by Dr. Souther, the author of the course — *Technical Report Writing* (John Wiley & Sons, 1957). This text ties in closely with the material Dr. Souther prepared for the company course and follows his design approach to the problems of technical writing.

Dr. Souther writes in the preface to his text, "If properly applied, the design approach to technical writing will prove as effective in the writing of reports as it has in the production of engineering products. The system is sound; its application to writing is not difficult." It is evident that Dr. Souther has created a text and a course which recognizes a logical approach to technical writing. The application of his principles by technicians, engineers, and scientists will aid in achieving craftsmanship of effective written communication.

ACHIEVING CRAFTSMANSHIP

To achieve craftsmanship in writing, the student has now discovered that he must follow a definite program for his writing development. He has found that putting words down is easy; writing is hard. The chief difficulty for a technical person who is an inexperienced writer is the uncertainty as to what should be done. Worry seems to take more out of him than work. Too often he tries to visualize the complete paper at the very start, even before any material has been accumulated and evaluated. This person should consider improvement in background and fundamentals, development of a style, and ability to master reader psychology.

A technical writer should form good language habits by taking steps to improve his background. He should learn what is appropriate to good English, and he should know form or construction generally used by established writers. Improvement in the basic fundamentals of writing — grammar, spelling, punctuation, and sentence structure — will aid in achieving a high standard of performance in every paper. Practicing the points learned, reading good books, and listening attentively to good conversation or talks will help considerably.

A general working vocabulary that eliminates all trite or hackneyed expressions should be built up. This vocabulary should include the exact words needed to express the precise shade of meaning that lends smoothness to style and to provide the thought symbols required to think imaginatively and creatively. Ultimately a good style that is both varied and pleasing will convey more meaning to the reader.

A PROGRAM FOR CRAFTSMANSHIP

1. Improve your background by learning good English.
2. Improve your knowledge of the basic fundamentals of writing.
3. Build up a good working vocabulary.
4. Eliminate all trite and hackneyed expressions.
5. Acquire a skill in interpreting problems as they appear.
6. Master reader psychology.

Figure 2

Finally the writer should acquire a skill in interpreting problems as they appear; then he must incorporate the proper and best solutions. An attempt should be made to master reader psychology and to present the technical material in a way that will be best received by the reader. Figure 2 gives the six-step outline for a program of craftsmanship.

By now our technical writer has found that writing is *work* and should be attacked in a workmanlike manner. Like any design job, he should follow a definite series of steps. Each step has its own peculiar problems, and by solving them as they appear, each solution makes its contribution to the finished paper. Seeing the stages clearly, where each can be written by itself, advances our writing orderly and profitably.

Mastery of the fundamentals of good writing, as Dr. Souther has treated them in his design approach, should equip the technical writer for solving any technical writing problem. The experience gained and the lessons taught in a writing course derived from these principles should aid management in training engineers to be better writers and to achieve effective written communication.

The student of technical writing should consider it as a professional course. He should understand its principles and master its skills just as he masters his own professional training. Responsibility for solving technical writing problems must come from the engineers and scientists of today. They must write more effectively, just as they rely on the clear, concise communications of others.

The ability to write effectively is one of the most valuable assets any technical person could have. Ω

About the Author . . .

J. L. HAMILTON *is Supervisor, Instruction Book Unit of the General Electric Power Transformer Department, Pittsfield, Massachusetts. His career in technical writing began in 1948, when he became an instruction book writer with G.E. He assumed his present position in 1954. In addition to being a member of STWE, Hamilton is affiliated with the Society of American Military Engineers.*

TECHNICAL REPORTING (Revised). Joseph N. Ulman, Jr., and Jay R. Gould. 382 pages. New York: Henry Holt and Company (1959).

Many excellent textbooks have been ruined by revision. The reason is understandable: what had been a tidy, neat affair, directed to a carefully selected end, suddenly is transformed into a hodgepodge, overloaded with a variety of matter — all because the author has attempted to satisfy the particular desires of a host of users who have taken the trouble to write in their preferences.

It is good to announce that Ulman's excellent *Technical Reporting* has not suffered this fate. True, the current edition is largely a matter of substitution and addition, but the book retains the qualities that made the first edition a welcome text to a large number of teachers of reporting.

Professor Jay R. Gould, head of the well known Technical Writer's Institute at Rensselaer, has selected judiciously the elements with which to supplement the original work. The result is an expanded but uncluttered book. It still focuses upon the essentials of technical reporting, serving as a guide to the principles of functional structure, to the basic requirements of an effective style, and to the mechanics of composition. As both a text and a reference manual, it is presented in a reasonable and intelligent manner.

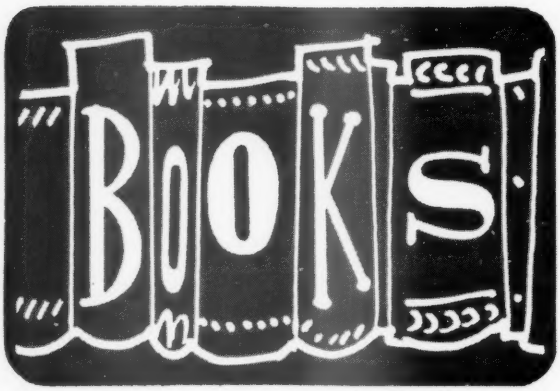
The new material recognizes the expanded area in which scientists and engineers now write, and reflects Professor Gould's experience as teacher, author, and consultant on technical writing. In a hundred or so pages he discusses the essentials of technical description — a subject, incidentally, that has long been neglected as minor but now looms as a most difficult and challenging kind of writing in view of the strides being taken by the nuclear and space sciences — technical articles and papers, and the preparation of the thesis. These additions broaden the scope of the book without altering its original character.

Technical Reporting Revised is a good book for the classroom but equally good for that reference shelf in the office.

W. Earl Britton

SUCCESSFUL TECHNICAL WRITING. Tyler G. Hicks. 287 pages plus index. New York: McGraw-Hill Book Co. (1959). $5.50.

This is a book with strong differences from the usual text on technical writing. Whereas most are thinly disguised composition texts or grammar handbooks or at best detailed treatments of experimental reports, Mr. Hicks' book gives little more than a perfunctory nod in the direction of style, grammar, and technical reports.



To quote from the preface, "This book offers solutions for most of the writing problems of engineers and scientists preparing material for publication. It covers technical articles, news and equipment releases, engineering and scientific papers, reports, catalogs, advertising, instruction and training manuals, and technical books. . . . Though written primarily for engineers, scientists, technicians, and technical writers, many professional writers will also find this book a big help. Emphasis is placed on how and where to get *good* ideas, and how to develop them into publishable articles, manuals, reports, or books."

Principal emphasis is clearly on technical articles, as one might expect upon learning that Mr. Hicks has published over a thousand articles and that he spent six years on the editorial staff of *Power* magazine. The nine chapters (of seventeen) devoted to articles contain a wealth of detailed practical advice and examples.

The chapter on reports might have been omitted without damaging the book. The chapter on military and industrial training manuals is good familiarization material, but the one on training manuals seems to have been used as an excuse to talk about composition and style. There is also a "quick look" at industrial advertising and at catalogs, but the second major emphasis is on technical books — "the ultimate challenge" — which occupy the last three chapters. Every chapter is followed by a list of questions on content, a "Chapter Check-up." There is no bibliography; indeed, about the only books Hicks mentions are examples of technical books in the last chapters — all of them, curiously, published by McGraw-Hill, for whom Hicks now works as an editor.

This is a book which should be read by anyone who must write or aspires to write technical feature articles, but it will never win a prize for style — Hicks went Gunning too often for complex sentences: very few run more than twenty words.

Frank R. Smith

A REVIEW OF LITERATURE ON TECHNICAL WRITING. Boston: Boston Chapter, STWE (1958). $1.00.

A pamphlet containing reviews of 75 books on technical writing has been published by the Boston Chapter. The following excerpt from the foreword explains why this unique booklet was published:

"In this twentieth century technological revolution, good technical writing has a vital part to play. The reasons are clear and overwhelming: the age of space is dawning; the age of nuclear and solar power is fast approaching; the age of electronics is booming. More than ever before, the peace and progress of the world depend on understanding between peoples and nations. Technical writing can help promote that understanding."

Although the original typing for multilith reproduction leaves something to be desired, the reviews themselves are an authoritative, up-to-date, wide-ranging guide to the fast-growing literature on technical writing. The reviews were written by professional technical writers and editors, all members of the Boston Chapter's bibliography committees of the past two years. Hence the reviews represent the opinions of the committee members only and not of the chapter itself.

The booklet is divided into six chapters: (1) Report Writing, Scientific Writing, and Instruction Manuals; (2) Style Manuals and Handbooks of English Usage; (3) Writing Direct English; (4) Copy Preparation and Production; (5) Layout and Illustration; and (6) Specialized Dictionaries and Reference Books. An author index is included.

The pamphlet has been given to 77 colleges and universities that offer courses in technical writing and allied subjects. Copies have also been given to national STWE headquarters, the Newsletter, *STWE Review*, and each local chapter. Copies can be ordered from John McKiernan (12 Elm Street, Georgetown, Massachusettts), secretary of the Boston Chapter.

Harold K. Mintz

TECHNICAL WRITING AS A PROFESSION. Allan H. Lytel. 84 pages plus appendix. Cincinnati: Allan H. Lytel (1959). $3.50.

In this recently published book, author and *STWE Review* Editor Allan Lytel writes uniquely of the many phases of technical writing as a profession.

The wealth of information (e.g., references, definitions, standards, examples of technical writing) given in this book set a precedent for coverage of the enormous and highly diversified profession of technical writing. Yet, in spite of the widely scattered and greatly specialized facets of this field (which might seem so nebulous to integrate as to defy publication), Mr. Lytel has woven his book together with strong threads that result in a core of clarity. The highly professional, the undergraduate, the beginning writer, even the merely interested person outside the field, can glean valuable information from this book. Every technical writer can gain new insight into his profession and capture solid, sink-your-teeth-into information for his own benefit and use.

Mr. Lytel has settled the old, hashed-over question of "what is a technical writer?" once and for all. He presents various types of technical writing and quotes authorities from many phases of the field. His definition of a technical writer eliminates, at last, the vagueness that crops up persistently in the writer's mind about what he actually *is*. Mr. Lytel's words lend dignity and prestige to the profession. His paragraph on "The Engineer and the Writer" makes a natural distinction between engineer and writer, a differentiation that has long been elusive to define.

Another section of the book discusses technical writing jobs, their titles and descriptions. Salaries in the field are enumerated, from the average beginning writer to the professional project leader and administrator. Professional growth of the writer is also delved into.

The various backgrounds, kinds of education, and starting points of the writer (the history of technical writers) are explained by Mr. Lytel in an interesting and well written fashion. Also covered are technical reports, instruction manuals, specifications, illustrations, and advertising and publicity (including examples), with illuminating comments from authorities in these phases. He presents an all-encompassing, clearly chartered path of technical writing in the light of past, present, and future conditions.

Technical journals, papers, and magazines are explored and listed for the reader. Science journalism, a new and extremely interesting field, is another segment of the book. Technical books, publishing procedures, technical teams of writer and editor, artist and draftsman, writer and librarian are also clarified precisely by the author.

In the comprehensive appendix, Mr. Lytel lists professional groups and societies in the field, professional journals and technical writing college curricula. A bibliography is included on English usage, report writing, communication and related topics, illustrating and layouts, proofreading and printing, speech, and other topics. An exhaustive list of technical book publishers is also given.

Every person in the technical writing field will find this book a revealing saga of the history of his field. He will be able to chart his own future course with greater efficiency and awareness of existing conditions. He can use the book as a ready reference and as a special tool in his daily work.

Technical Writing As A Profession is highly recommended. It is an outstanding contribution to the technical writing field.

Anne L. Gregory

GRAPHIC METHODS IN STRUCTURAL GEOLOGY. William L. Donn and John A. Shimer. 180 pages. New York: Appleton-Century-Crofts, Inc. (1958).

In the determination of the geometry of the structures of subterranean strata from surface evidence and from drill-core data, graphic procedures are considered to be convenient and rapid. The authors lead the reader into a clear and concise presentation of the more important methods through an orderly development of topics.

Part I reviews, and clearly illustrates by the use of numerous drawings, the nature of bedded rocks: their horizontal, tilted, folded, and faulted structures; unconformities; and intrusive contacts. The remainder treats the graphic procedures: Part II, the use of orthographic projection, and Part III, the use of stereographic projection in the solution of problems relating to true and apparent dip, strike and dip, intersecting surfaces, plunge and pitch, lineation, faults, etc. In the latter part, the use of stereonet as a graphical aid is featured, and later the use of points representing poles of planes is introduced as a simplification in the graphical construction. The value of the methods developed in this part is illustrated in the chapters, for example, on rotation of the sphere of projection about a horizontal axis and about an inclined axis.

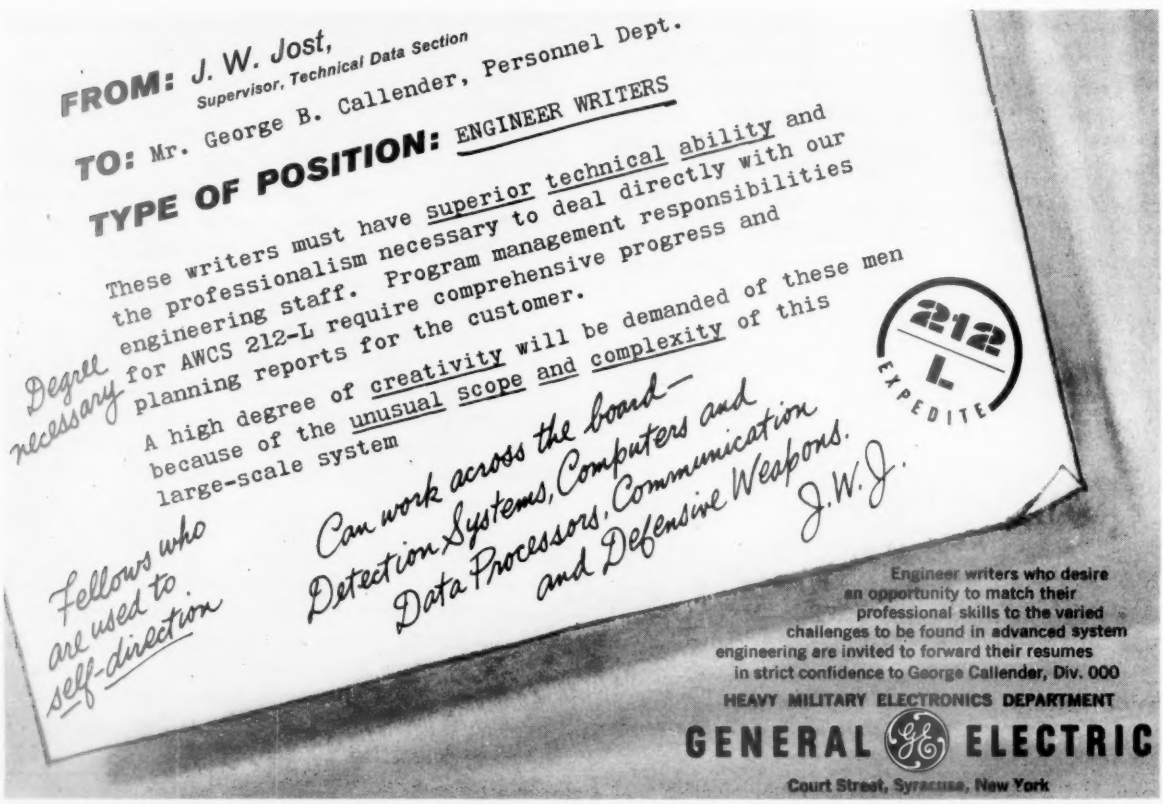
The appendixes give useful construction aids, alignment charts, and a selected bibliography; and blank stereonets are provided for the reader who wishes to practice the construction methods described. Several of the chapters are accompanied by exercises for students of this subject.

The chief strength of this book is its profusion of clear, instructive illustrations. The graphic approach is emphasized, to the exclusion of analytical methods, as the authors apparently intended. While no novel concepts were introduced, the book is, as the authors hoped, useful as a complete manual on the particular subject of graphic procedures.

C. R. Embree

INVENTING TO SELL. Frank V. Higgins. 164 pages. Arlington, Virginia: The Varsity Press (1958). $5.00.

Our fellow STWE member Frank Higgins seems to be a prolific author, at least on the subject of inventions. His *One Hundred And One Don'ts for Inventors* was reviewed in this column a few issues ago. His new book on inventing describes two important basic methods for success in this profession. The first is the technique required for creating an invention in the most logical manner and with the utmost efficiency regardless of the time and resources available to the inventor. The second is the economics involved in the selling and purchasing power of those industrial activities which are so necessary and essential to make inventions profitable.


FROM: J. W. Jost,
Supervisor, Technical Data Section
TO: Mr. George B. Callender, Personnel Dept.
TYPE OF POSITION: ENGINEER WRITERS
These writers must have superior technical ability and the professionalism necessary to deal directly with our engineering staff. Program management responsibilities for AWCS 212-L require comprehensive progress and planning reports for the customer.
A high degree of creativity will be demanded of these men because of the unusual scope and complexity of this large-scale system
Degree necessary
Fellows who are used to self-direction
Can work across the board—Detection Systems, Computers and Data Processors, Communication and Defensive Weapons.
J.W.J.
212 L EXPEDITE
Engineer writers who desire an opportunity to match their professional skills to the varied challenges to be found in advanced system engineering are invited to forward their resumes in strict confidence to George Callender, Div. 000
HEAVY MILITARY ELECTRONICS DEPARTMENT
GENERAL ELECTRIC
Court Street, Syracuse, New York

The book is divided into four parts. The first part deals with the basic principles of inventing — how to go about inventing. Two parts are devoted to the types of inventions used commercially and by the military. The last part covers the various ways of selling an invention. An appendix gives over 800 suggestions on valuable fields and topics for creative inventors to work on. A second appendix is composed of a bibliography of books and other sources that give specific information on inventing.

My only complaint with this book concerns its format. The page size is 8½ by 11 inches and the text width is 7 inches, which makes reading a little tiresome. On the whole, the book is well written and interesting.

R. A. Hanousek

RELIABLE ELECTRICAL CONNECTIONS 1958. 286 pages. New York: Engineering Publishers (1958). $7.75.

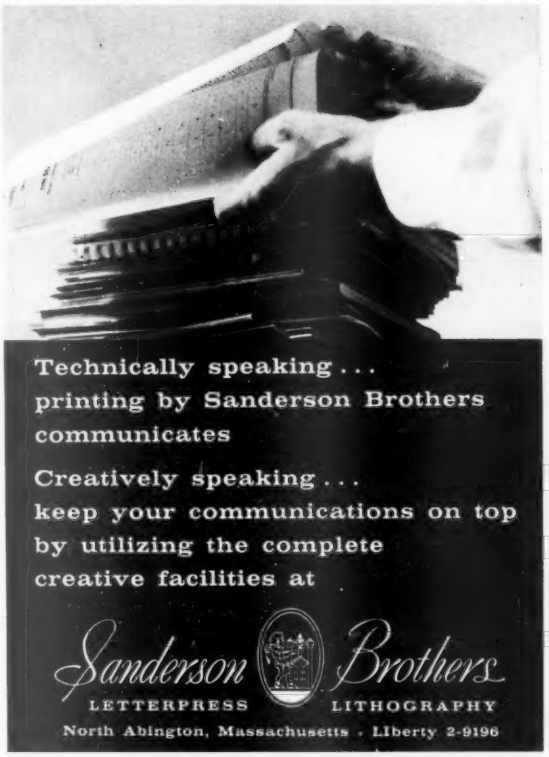
This is an unusual book on a unique topic, and it is worthy of special notice because of the publishing technique. R. George Roesch, of the Eraser Company in Syracuse, New York, is the world's leading exponent on the reliability of electrical connections. Mr. Roesch, a dynamic personality in his own right, organized and presented, with the help of his committee, the third Electronic Industries Association Conference on Reliable Connections. The conference, which was held in Dallas in December 1958, was called for the purpose of discussing the vital problem of reliability in electrical connections.

The Dallas conference had an unusual feature — printed copies of all of the papers to be presented were available in book form *before* the meeting. In this way, every attendee had an opportunity to read and digest the technical material before the speakers were presented. Such a method provides for a thorough discussion of the problems involved and an opportunity to discuss these papers with the authors. A great deal more could be accomplished at other technical meetings if this same technique were followed.

This book is actually the collection of papers. There are 32 in all, written by some 45 engineers and scientists describing their investigations and research into the problems of electrical connections. The papers include discussions of fixed, sliding, soldered, pressure, wire-wrap, welded, and other forms of connectors. It was not my pleasure to be present at this conference, although I was invited to take part by Mr. Roesch. However, reading the papers makes it very clear that this book is a contribution to the technical literature and will serve as an example for other similar technical meetings.

Since this book is a collection of papers, there is of course a lack of continuity. It also suffers because of the absence of an index.

A. H. Lytel



Technical Reporting, *Revised*

JOSEPH N. ULMAN, JR.
Consumer Reports Magazine

JAY R. GOULD,
Rensselaer Polytechnic Institute

PERHAPS THE PRIMARY REASON for the extraordinary success of *Technical Reporting* has been its efficacy to demonstrate clearly and concisely how technical and scientific information can be transmitted in a report without obscuring it by a mass of detail.

A basic text for courses in technical writing for students of engineering and the sciences, it is realistic and modern in content and stresses a practical rather than a purely academic approach to grammar, punctuation, and style.

HENRY HOLT AND CO.

383 Madison Avenue • New York 17, N. Y.

(Continued from Page 17)

There are those who regard technical writing ability (or for that matter, any talent outside their own professional domain) as relatively simple and easy to acquire. This is certainly not logical thinking. Good writing in any form is a difficult art, requiring years of patient effort to acquire mastery. For positive proof of this statement, submit your work to a city editor, an agency advertising manager, or a critical procurement officer.

Nor is it possible to supervise or edit written material intelligently unless you are a competent writer. Otherwise, what could you use as a basis for criticism, rearrangement, alteration, or improvement? It is axiomatic in the literary world that you cannot possibly act as a competent critic unless you have extensive writing experience as well as an intimate familiarity with literary style and technique. This is equally true with technical writing.

Some go so far as to claim that editing is a distinct and separate function from writing. Nothing could be more absurd. This is just as ridiculous as attempting to divorce bricklaying from building construction, or mathematics from engineering. Editing is an inseparable part of literary production, the very basis of which is the written word.

Good writing must be more than simple communication or clear explanation. It must be vivid and graphic . . . it must paint such a living picture in the reader's mind that he is drawn over the boundary of reality . . . into the web of your imagination. This is difficult to achieve in technical writing, and it is often unnecessary. However, there are situations in which such writing is indispensable. For example, in trade journal advertisements or in proposal introductory material, the most subtle tools of persuasion must often be employed to win the mind of the reader. This type of writing can only be accomplished by a professional writer. For one who is merely technically oriented, it is impossible to achieve.

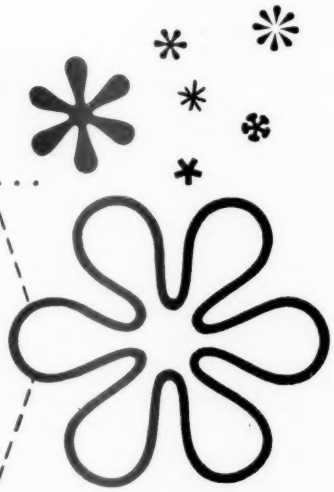
Good writing is good writing, be it technical or purely literary. Fraudulent writing — the high-toned, verbose stuff that is passed off for literature, but doesn't make much sense — will sometimes bear up under a casual glance, if carefully couched in good layout and expensive artwork. But the fact-finding scrutiny of the determined reader, looking for answers, will show it up for what it is . . . and it will be ignored or cast aside. Ω

CUSTOM Binding FOR 91 YEARS

TECHNICAL BOOKS
LOOSE LEAF BINDERS
PRESENTATION FOLDERS
MANUAL COVERS
INDEX TAB SHEETS
POST BINDERS
WIRE-O AND PLASTIC

ROBERT BURLEN & SON, INC.
301 CONGRESS ST., BOSTON
Telephone HA 6-6790 - 1 - 2

An asterisk can have many forms . . .



But this asterisk, when combined with the words Tech Art,

becomes the registered trademark of the Dayton Tech Art Company and symbolizes excellence in industrial communications since 1949.

tech art
DAYTON TECH ART COMPANY
1329 STANLEY AVE., DAYTON, OHIO
WRITERS AND ILLUSTRATORS OF COMMERCIAL AND MILITARY SALES AND SERVICE LITERATURE

The hands of a man

who craves responsibility....

They belong to a Raytheon Engineering Writer . . . a "take charge guy" who can direct others smoothly in coordinating artwork and photography for vitally important handbooks and reports.

They prepare material covering the operation, servicing, maintenance, and overhaul of missile systems . . . analyzing and organizing information received from engineering.

They handle individual assignments . . . delving into data on some of today's most sophisticated missile systems . . . transforming it into clear, smooth phrasing.

They work with and for men whose experience and ability are a constant inspiration . . . in a young, fresh-thinking company with a fabulous future before it.

They could be *your* hands.

If you have had at least two years' technical writing experience and a strong theoretical background in military electronics such as radar or sonar . . . take a *positive* step. Send your complete resume to Mr. R. K. Malcolm, Employment Coordinator, Missile Systems Division, Raytheon Company, 520 Winter Street, Waltham 54, Massachusetts.

RAYTHEON MISSILE SYSTEMS DIVISION

TECHNICAL WRITERS

career positions with IBM

Technical writers interested in stimulating and rewarding careers will find attractive opportunities at IBM. Qualifications include the ability to interpret, organize and present technical material in clear, concise writing . . . in some cases to read mechanical and electrical drawings . . . and to be able to communicate easily with technical and non-technical personnel.

Areas of Technical Writing Include:

Advanced computers
Analog computers
Circuit analysis
Computer systems and applications
Guidance systems
Machine logic
Product development
Programming
Special systems
Technical education
Transistor and cord circuits

Requirements: B.S. in Mathematics, Physics, Engineering or Journalism . . . **or,** experience in electrical or mechanical design plus two years of college engineering . . . **or,** extensive background in technical writing.

Advantages of IBM: You will find broad advancement opportunities and recognition at IBM. You are offered unusual professional freedom, comprehensive education programs and the assistance of specialists of many disciplines. This is a unique opportunity for a career with a company that has one of industry's outstanding growth records.

WRITE, outlining your qualifications and experience, to:

MR. R. E. RODGERS, DEPT. 681J3
IBM CORPORATION
590 MADISON AVENUE
NEW YORK 22, N. Y.

IBM®

INTERNATIONAL BUSINESS MACHINES CORP.

(Continued from Page 3)

membership of his chapter to determine its resources in each of the nine areas. The size of this job varied, of course: the IRE representative sent out 600 questionnaires and tabulated the replies on punched cards; another man talked personally with each member of his small group. But the result is a reasonably complete catalog of all the professional and technical resources of the area available to the teacher.

With this information accumulated, then, we appointed a Council delegate as coordinator for each of the nine services and gave him the appropriate list of names and facilities so that he has the resources of all the societies at his finger tips.

INFORMATION BROCHURE

To let the high schools know of our existence we prepared a simple brochure describing the Council briefly and setting forth the nine services we are prepared to offer. We sent enough brochures to the administrative office of a school to permit each teacher to get one. With each brochure we enclosed a stamped, addressed postcard on which we asked the teacher to give us a bit of information about himself — name, telephone number, teaching interests, etc. We explained that when we got the cards back we would send him the names and telephone numbers of the coordinators for the nine services. There were two reasons for this arrangement: (1) we wanted a registration file and mailing list of interested teachers and (2) we wanted to distribute the list of coordinators separately, with a date clearly terminating the effectiveness of the list. We will revise these lists periodically to spread the work and to take care of personnel changes, and we don't want a one-time coordinator to be bothered forever by telephone calls.

To supplement this initial promotion and to remind the teachers that we are here, we are sending out periodic newsletters. In each one we describe in some detail our resources in one of the nine service areas. We print these on punched notebook paper and suggest that they be filed as a catalog to our services.

FUTURE PLANS

In the future we will consider adding more services, we will repeat our chapter surveys of talent and facilities, we will continue our newsletter, and we will try to make the Council sufficiently well established that it can operate effectively despite changes in membership. We feel that it *should* go on: it is making a significant contribution to local science education.

So far, we have located nearly all sources of assistance, we have set up a clearing house for them, we have established direct two-way communication between the teacher and those who want to help him. Now we know what we can do for the teacher, and — even more important — *he* knows it too. Ω

MILLION DOLLAR ANNUAL SALES . . .

WITHOUT A SALESMAN!

With nine years of experience and a skilled staff of 140, Malt and Ness is a reliable source for technical publications and engineering services including data processing (we have our own digital computer). Our growing reputation for quality has created repeat business with industries such as Stromberg-Carlson, Sylvania, and Westinghouse, and has spearheaded a sizeable expansion of our staff and facilities. Our future objectives have created a challenging position for a sales representative having the proper background, familiarity, and experience for technical publication sales.

You may apply for this desirable position if you possess these qualifications: Degree in engineering or physical sciences, three years experience in a responsible position in the technical publications field, proven sales ability and contacts in industry and/or government procurement, strong personality, and unquestionable ethics.

We offer an excellent salary with bonus and unlimited potential to the right man for this job. Relocation may not be necessary. If you qualify, send in your resume today. All replies will be held in confidence.

& MALT NESS

MALT & NESS, INC.

1234 Genesee Street • Buffalo 11, N. Y.

LETTERS

(*Continued from Page 2*)

If Mr. Reising wanted medical advice he would not go to a veterinarian; yet I submit that the veterinarian is closer to the medical doctor than the journalist is to the author of an engineering report. The journalist and the technical writer write to different audiences and therefore use different approaches.

The technical writing profession is today where the medical profession was decades ago or the engineering profession more recently — it lacks a definition and a set of standards.

We can profit from the experience of the engineering and medical professions who found that, to establish the stature of their professions, rigid training requirements were needed. For example, fifty years ago the counterpart of today's industrial engineer was probably a stepchild of mechanical engineering. As industrial engineering came into its own, colleges designed a curriculum to train industrial engineers. Today other fields of engineering have reached maturity and curricula have been created to train men for these fields.

We cannot hope to acquire the recognition due our profession if we regard it as the stepchild of journalism. We will rise in stature as men such as Dr. Olmstead of Rensselaer, devoted to our cause, carry the educational standards of our profession forward, and when we establish standards that men must meet to join our ranks. Let's look ahead when planning and not retard our progress by planning to perpetuate the indirect avenues of approach just because many of us have successfully entered the field via these avenues. The technical writer can find no substitute for a knowledge of mathematics and science or engineering — not even training in journalism together with an aptitude for tinkering with automobiles.

We now include anyone who writes for industry in the technical writing profession, even though his product is not technical. The author of a nontechnical brochure and the author of an engineering report can obviously be two entirely different species. The former does not need the same training as the latter.

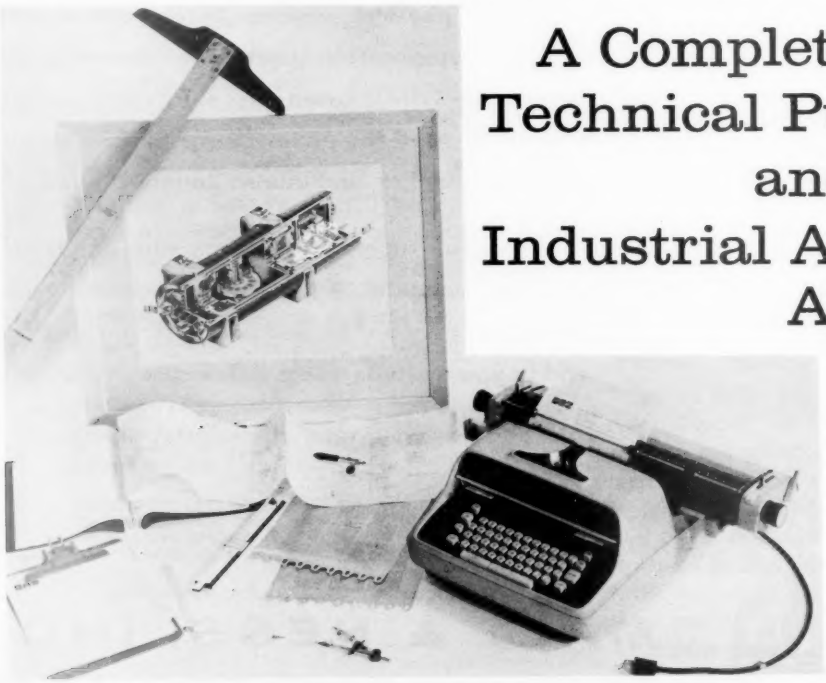
The time has come to categorize the field of writing for industry so that we recognize the distinction between the varied endeavors now heaped together under the label of technical writing and editing. Although Webster may be quoted to argue that *technical* relates to business or even sports, the word is commonly accepted as meaning scientific; for example, a technical education is one that emphasizes science, not business. Therefore to call a man who can't check an algebraic solution requiring high school algebra a technical editor is a misnomer. A man who doesn't know the elementary physics underlying the definition of boiling point should not be herded into the field of technical writing in order to do nontechnical creative writing for industry.

As a first step in categorizing the profession, let's create a division for the *industrial writer* to include the writer who doesn't have or need technical training. Leave the title *technical writer* for writers who have and use technical training which was acquired either formally or informally.

This suggestion would stop the conflict between technically trained and nontechnically trained personnel, and get some of the people engaged in the writing profession off the defensive.

Barclay E. Tucker
The Martin Company
Baltimore

Editor's Note: There is one method of resolving the apparent difference between Barclay Tucker and Bob Reising. Imagine a scale of values. On one extreme there is the scientist writing for other scientists in a journal, on the other there is a newsman writing in the daily paper for the layman. Both can write on technical subjects. Most technical writers are in the center of this scale and draw from both science and journalism.



A Complete
Technical Publications
and
Industrial Advertising
Agency

Quincy Office
1458 Hancock Street
Boston (Quincy) 69, Massachusetts
Telephone GRanite 9-3550

Washington Office
1636 Connecticut Ave., N.W.
Washington 9, D. C.
Telephone DEcatur 2-8595

S. GUNNAR MYRBECK & COMPANY, INC.

OFFICERS OF THE

SOCIETY OF TECHNICAL WRITERS AND EDITORS

PRESIDENT

Thomas A. Grogan

Technical Writing Service
McGraw-Hill Book Company
New York

VICE-PRESIDENT

Vernon M. Root

Applied Physics Laboratory
The Johns Hopkins University
Silver Spring, Maryland

SECRETARY

Jeanne B. North

United Aircraft Corporation
East Hartford, Connecticut

TREASURER

Dorothy M. Welsh

E. I. duPont de Nemours & Company
Wilmington, Delaware

EDITORIAL BOARD

W. Earl Britton
University of Michigan

Anne L. Gregory
General Electric Company

Frank R. Smith
Air Force Institute of Technology

H. C. McDaniel
Westinghouse Electric Corporation

Robert A. Sencer
Rensselaer Polytechnic Institute

ETD, INC., CAN SOLVE YOUR TYPESETTING, IBM AND DSJ COMPOSITION PROBLEMS

AT EWING TECHNICAL DESIGN, INC., skilled typesetters, compositors, IBM and DSJ operators, and mechanical pasteup personnel are experienced in preparing reproducible copy for Government handbooks, financial statements, progress reports and company proposals. This competent staff is security-cleared and thoroughly familiar with both military and commercial specifications.

Typesetting facilities offer a wide variety of contemporary and classic type faces, sizes and symbols in Foundry, Monotype and Ludlow type. Reproducible cold type facilities include numerous IBM Executive and DSJ Varitype machines having a diverse selection of modern, legible type fonts.

ETD, INC.s experience and unique one-source composition facility can meet your most stringent time limitations. Prominent industrial organizations in the United States repeatedly avail themselves of ETD, INC.'s complete in-plant services which also include promotional and technical writing, commercial and technical art, photography and printing.

For additional information or counselling, please write or telephone collect.

EWING TECHNICAL DESIGN, INC. 1913 Arch Street Phila. 3, Pa. Locust 7-4430